

1880

100

Call 482

Good specimens 'Horn Silver' said
to be obtained at Vulture Mine,
Cinnville, Mo.

Christy, D. M. Ed. Carter. Post H. L. L. L.

Penaeus from the water = *Penaeus setiferus*.
The little *Penaeus* found in the long filamentous network
distributed by the *Penaeus*, *Phyllosora* - *Balei*

Penaeus from the water = *Penaeus setiferus*.
Died Sep 7, 1883.

Coll. 482 (4)

1880-83

vegetal Dish Rag = *Luffa acutangula*.

Mimosa Julibrissen = First noticed in
Garden of Agriculture Dept. at Washington
Grows well south & formed some fine shade
trees at Morganton, N. C.

Notice hung up in Office of Hotel
at Morganton N. C.

"The keep'a man in the back yard
to do all the cursing and jawing. Shall
we call him?" Dr. Hoopoldt

The green and spotted hemipterous
insect taken from Home radish and
cabbage in the garden of Hotel
at Morganton. Destroys conciferous plants

P. Harveys & Co

Chinese Sugar cured

Breakfast Bacon, Balt. Md.

Vedas, Sacred books of the Brahmins -
oldest religion of India, dating
4 or 5000 years ago. Buddhism
appeared about 500 years B. C.

Depressor nerve in Man.

Kreidemann. Archiv. ges. Phys.
Mensch. u. Thiere. Bonn 1868, I,
211-255.

In Rabbit = 2 roots from vagus -
one from vagus & the other from its Luf.

but apical branch descends neck
& joined by filament from 31 Cervical
ganglion. of Sympathetic, & goes to
heart.

1880.

Summer excursion to mountains
of western North Carolina. June
22, 1880. Party: Dr. F. C. Porter, Jr.
Miller, Thos. Meekam, our wives, my
daughter & Sallie A. Hoess. Left 11.45
Washington at Willard's. Visit to Capitol,
Agric. Dep. (Dr. Vesey) & Sm. Institution
with new Museum Building.

June 23 Left via Richmond, Danville
Salisbury to Morgantown, N. C. and
arrived in afternoon of —

June 24. Put up at Hotel of Dr. Hapfeldt

In route from Salisbury observed:
country rolling, hilly, uneven covered
with a red clay soil, with little earth mounds
based on gneiss rocks — Edges of road
adorned with *Lesoma radicans*, *Schreberia*
uncinata *Passiflora incarnata*, *Clitoria*
mariana, *Oxydendrum*, *Chimaphila*.

June 25 Trip to Piedmont Springs 16 miles
from Morgantown — Table Mt & Transparker
Mt. seen in distance. A sulphur and
a chalybeate spring at Piedmont.

Pinus insps. laevis, rubra etc.

Quercus fasciata, obtusiloba, alba, tinctoria,

Black jack, L. agrostica, Chestnut,

Walnut, Cherry, Magnolia Przew.

Rh. dodonaea maximum. Sweet Gum,

Amorpha canescens (Diospyros) -

Country everywhere covered with

Lespedeza striata supposed to be

introduced from Japan (Doubtful).

June 26 Return to Morgantown.

On road, at a spring, few miles north

of Morgantown, picked up a number of Melania,

and a variety of the Calappa and

Cantharus. A pile of coconuts

and other large holes, some with shells in,

probably made by latter.

Sunday June 27 Remain at Morgantown. Went

to Presbyterian Church.

Monday afternoon June 28 Left Morgantown

by rail to Henry Station at base of Blue

St. Evening ride in open car to

summit of the Mountain & return

to station. Use of car through kindness of

Major J. W. Wilson, Morgantown, Pres. of
the Western A. C. Railroad.

Thurs. June 29th. Ascend again to summit of Mt. Franklin all day. Great landslide near summit, called the 'mud cut' Employment of Convicts to work on the road; hired by R. Co. from State.

Nothing remarkable in the vegetation. Ascent of the railroad very serpentine with beautiful views of the mountains & valleys. In evening continue on Railroad to end of latter & then take stage 5 1/2 miles to Asheville & put up at Eagle Hotel.

S. rostrata, *Passiflora* etc. disappeared after leaving Wilmington.

Wed. June 30. Nothing entered at Asheville.*

Sat. July 3d left Asheville by stage for Wolf Creek. Sat. afternoon pleasant drive on French Broad R. for 9 miles. to "Alexanders" on the river. On the cliffs collected *Polypodium* in common *Cheilanthes tomentosa* *C. vestita*. Excellent accommodation at Alexanders, & at breakfast had a fish "Red Horse" which was excellent.

* Altitude 2250 ft.

Sunday July 4 Continued our drive
by stage along valley of French Broad
R. and stopped at Marshall,
Madison Co. to dine. 'Revolving table'
'Catfish' excellent. a good dinner.
Afternoon continue the drive, over a
rough road though through a beautiful
country. The scenery of the French
Broad magnificent. In the route
we struck on the fence a 'Spoonbill
Cout' Polyodon folium. Evening arrive
at 'Warm Springs' A beautiful
country, with large excellent hotel
etc. on French Broad R. Met Dr.
Lester. Saw the warm springs with
temperature of about 100°. Water
appeared nearly tasteless.

Mon. July 5. Leave for Hot Springs
a delightful drive of 9 m. across
the hills. *Oreocera Macrodon* *H. neri*,
M. macrophylla, & *M. acuminata*
known. none abundant. Also
Bignonia

Excellent dinner at Wolf Creek: - Turkey
Hound, 'Fresh water Drom' abundance
of vegetables. Polygonum again.

Afternoon leave by rail for Morristown
East Tennessee. On the way, near
town of Newport, noticed on the right
bank of the French Broad R., some
high limestone cliffs, on face of
which high above the water
could be seen the arched entrances
of several caves! Evening stopped
at 'Cain Hotel Morristown.

Most of the country passed over from
Falsberry N. C. consisted of a series
of Laurentian rocks, mostly gneiss
and schists & granites. First
limestone noticed at Warm Springs
& this continued along with
red & clay colored shales to —.

Leave July 6. Special car attached
to a passenger train & go to Johnson
City Tenn. & put up at 'City Hotel'.

July 7th Wed. With two stages drive
to Crown Mt, 32 m. In evening
arrive at Cloudland Hotel near
summit & at elevation of
6367 feet. Magnificent scenery
in the route. Top of mountain
comparatively bare of trees.

The forests mainly of *Abies nigra*
& *A. Fraseri* - Chief Shrubs:

Rhododendron Catawbaense
with abundant growth of *Leisophyllum*
huxifolium. The mountain of
granites and gneisses of the
Laurentian series, with flint
at base covered with limestone.

July 8th Arrive in forests covered
with *Hypnum*. Excursion in vicinity

July 9th. Excursion.

Small white *Gordius* with
fuscate tail found in puddle
on road about 2 miles below
Cloudland Hotel. See spec.

July 10th 1880 Colorado Hotel,
Rock Mt., N. C. 6367 feet
above sea level. Examination
of Sphagnum collected from
dipping rocks and vicinity of
springs where it grew in
company with a greater
profusion of Hypnum.

Especially abundant were
Stichela nummata and *S.*
flabellulum. *Trinema acinus*
and small Euphyas of
compressed form and without
spines or hairs.

Stichela nummata of varied form
oval to flask shape. Shell
mostly of circular disks, uniform
and minute or of larger disks
in a minute row in the intervals
thoroly distinct, but in a
smaller number clearly
obscured.



All measurements except where specially

given were from the $\frac{1}{5}$ objective,
and from the broader side of the
specimens as they are usually seen.
Nehela murata:

1. Oval, living. 13-10 month 3
2. do 14, 10 month $2\frac{1}{2}$
3. Oval with short neck; living;
13-10-2. Nucleus 2. Discoid
marks of shell, minute, circular,
uniform, about $\frac{1}{2}$.
4. Oval, with short neck; shell of
circular disks, of varied size, the
large are fewer about 1 with
smaller ones occupying intervals. The
markings distinct. 13-10-3.
5. Oval with short neck 16-13-4
neck 1 long. Disks of shell distinct
a few large, circular 2 diameter
some in a ball 8 diameter.

Nehela flabellulata:

Nearly circular and with a short
neck, sometimes obsolete. Shell
mostly of minute circular disks,

uniform in size or variable, occasionally
of elliptical disks.

1. Nearly circular with short neck.

13-13-3.


2. do 12-12 - neck 1 long, mouth 3.

3. do 12-13 - neck 1 - mouth 3 - Shell
of minute elliptical disks.

Nebea numata - Flask shaped, of
minute circular disks 14-8-3.

Linema acinus. Small and usually
without distinct markings. Mostly
empty shells & very numerous.
Of variable shape and size and
degree of narrowing opposite the
mouth.

No. 1. 5 by 3 in the broader view

2. 8-5 mouth 2 oval 

3. 8-5 do oval 

4. 9-5

5. 9-1 with minute circular disks.

6. 10-7 

7. 10-5



Euglypha. Compressed, spineless,
Apparently with 10 teeth to the
mouth, mostly thicker than the
rest of the shell.

1. 7-4-2 Shell 2 thick.

2. 7-4-2

3. 8-4-2 Abundant.

Euglypha. Compressed, 10 points
to mouth - 18-10-3½ with short
lateral hairs or spines 2 long.
Living; nucleus 3. Scarce

Euglypha. Compressed, 10 pts to
mouth, scales more or less distinct
all over hirsute with minute
hairs except at or near the
mouth. Teeth thickened

1. 12-7-3 hairs about 1



E. stryana

2. 12-8-4 Scales distinct; hairs
scarcely 1. More frequent than
the one with only lateral hairs.

Euglypha brunea Frequent
; varied size and depth of color.

1. dark brown 8-7-2½

2. pale brown 9-8-5.


Placocista spinosa






Euglypha spinosa Meas. with $\frac{1}{10}$

Living sp^m - only one observed.







28-18-month 7. Lateral spines
hair like, short, single & in pairs
3 long. Nucleus transversely oval
7 by 6 with two nucleoli 1 diam.

Diffugia emstricta - only one seen
Shell of indistinctly defined particles
of sand - in lower view 10 by 8 - of
a yellowish hue. Probably a
Trinema?  ($\frac{1}{5}$)

Sunday July 11th. Ex. of same Sphagnum
Nehela numata, frequent, from
oval or ovoid to flange like. ($\frac{1}{5}$)

Nº 1 15-12-3½   


" 2 14-9-2

Trinema acinus Frequent & of varied
form = oval. pear shape - of varied degrees
of biliquidity. In lower view smooth
sometimes appears terminal, subterminal
& others considerably removed from the
ant. extremity      

4 - 2½ - 1 oval

6 - 4 - 2 pyriform

7 - 5 - 2 

7½ - 6 - 2 - 

Last view of one 12 - 6 - 2. with (1/5)

Euglypha. Compressed, spinelless,
small form frequent.

One with 6 teeth? 7 - 4 - 1½

one with 15 teeth? 17 - 12 - 6

one with 10 teeth? 8 - 4 - 2 nucleus 1½

Euglypha, Compressed Ovoid, with
about twelve teeth? With sixteen
short fusiform spines attached to
the lateral border. 17 - 12 - 4
Spines 1¼. Nucleus uniformly and
distinctly granular 3 diam (1/5)


Only one specimen observed. = E. ciliata.

Euglypha brownii * occasional form
colorless to dark brown

8 - 6 - 2 - Sarcule with nucleus 2

13 - 12 - 4 nearly colorless, no neck (1/5)

* Acanthina seminulum

Diffugia constricta, larva caps from
with shell of sand & yellowish dirt
18 by 17 - opposite mouth 13. 

The forest carpeted with three species
of Hyppurum as follows: H. splendens,
H. crista castrensis & H. trigetrum,
among which were conspicuous the
Orchis acetosella in flower.

The forest of Alnus Fraseri and A.
nigra with Sorbus americana,
and abundant undergrowth of
Rhododendron maximum & R.
catanhalense.

A tuft of Hyppurum splendens
moistened and squeezed exhibited
the following:

Nebela murata? not infrequent
of plank like form, shell of minute
lenticular disks, with concentric striations
and of uniform size. 23 - 16 - 6
Sensory mass oval, colorless
12 by 10 nucleus not seen.

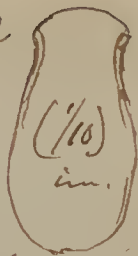
Diameter of shell about 1 inch ($\frac{1}{10}$ in).



($\frac{1}{10}$)

Another 22-13-6 convexly of mouth 2

Several others of same form
and character. Sarcide in
all encysted in oval masses
of various size. Meas. with $\frac{1}{10}$ in



A third measured with $\frac{1}{5} = 10-6-3$.

Surfaces appear to be covered thus:

Hyalosphaera, a single well
marked specimen observed, with
sarcide encysted on a ball
with much food including bright
yellow oil-like globules;

Shell pale yellowish brown,
compressed, nearly circular



with a short distinct neck.

H. trincta

23-24-8 with $(\frac{1}{10})$ neck $1\frac{1}{2}$ long

Sarcide $1\frac{1}{2}$ diam. An

periculum of dirt. Shell

roundness, but two pores

observed just above a portion of
the neck. Clearly allied to *H.*

patriculana.

Archela flabellulum, the most
frequent form of Archela. Shell
of round disks, variable in degree
of uniformity (1/5)

14-15-3 1/2 neck 1 14-15-3 neck 1

13-14-3 neck 1 13-14-3 neck 1

11-12-2 1/2 neck 1.

Geneside generally encysted in a
hull & shell lined with an opercle.

Archela monata of oval form.

Several observed. Shell of
minute round disks.



16-13-4-neck 1 long (1/5)

Asculina seminulum or

Euglypha brownii occasional of
varied size & hue from colorless to
dark brown. 9-8-3 \equiv 7-6-2 (1/5)

Trinema acinus. Frequent. (1/5)

5-4

6-5

6-5

7-5 nucleus of acinus.

6-6

Associated with the Rhizopods of the
Hyphnum there were many
sleeping. Rotifer vulgaris. from
colorless to a red line. Many
starch grains and pollen grains
of Alnus - but no diatoms.

Three fishes caught by Mr. Wilcox,
with the Brook Trout, & caught in
same manner. Belong to Cyprinidae
probably a species of Hyalestis.

Two preserved in alcohol & the
pharyngeal lines also preserved.
Fish with two longitudinal salmon
colored lines on sides, and light
salmon color on the cheeks.
Caught in a tributary of Doe R.
a tributary of the Cataraugus on
the north slope of Roan Mt., N.C.

A Hesperomys - which infects the
horon, caught and preserved.

July 12th Monday. A tuft of *Hypnum*
splendens moistened and squeezed
yielded the following.

Nehela flabellulum. Frequent
shell mostly broader than long &
with a short neck, sometimes nearly
or quite obsolete; colorless or pale
yellowish brown, composed of circular
concelli of variable size & proportions.

14-15-4 neck 1 long (1/5)

11-12-3 " do.

12 1/2 - 13 1/2 neck 1/2 mouth 3 with
operculum of yellowish dot. Scales
broad with central mass
of yellow food cells, some
oil like, Scales 8.



Nehela muricata. Occasional fluke
like forms of circular concelli (1/5)

11-7-3

Euglypha voraxia* moderately frequent

From colorless to brown, oval to nearly
circular 13-12-4 8-7-2 (1/5)

* = *Asculina seminulum*.

Diffugia —? Hemispherical, of fine
sand and dirt - mouth circular. Yellowish
in color. 10 diam. - mouth 3 (0) (15)
7 high. = *D. globulosa*.

Diffugia [†]; Hemispherical with trilobed
mouth () () Brown, rough;
shell incrimated with yellow. Green
dirt 22 lined 15 high - mouth 8. (15)
[†] = *D. arcuata*.

() Minute, colorless, oval $4\frac{1}{2}$ - $3\frac{1}{2}$ - 1
nucleus $1\frac{1}{4}$ - compressed structureless shell
resembles *Sphenoderis* but did not
present the wedge-like neck.

With the *Hygnum* were many
Rotifer vulgaris in active condition
Ova of the same. Others quiescent
no ciliate infusorians observed
Spores of lichens & fungi many
A *Lamprole* and eggs not
infrequent. Vegetable hairs
to diatoms or desmids.
A few young *Amphicellulae*.

Examination of water squeezed from
Sphagnum.

No Testifers! Rarely ciliate infusoria
No Gardineries, A few Anquillales,
Diatoms a number of species &
frequent, Desmids a few species
but not abundant. Starch grains
Pollen grains of Abies. Spores of
fungi & lichens - &c.

Nehela numata - Abundant and
of great variety of form, size, &
arrangement of cancellated structure
of shell. Pyriform & flask like
varieties most abundant.

Smaller forms most abundant:



13½ - 9 - 3 Shell distinctly (18)
cancellate with large & small
circular disks & about 12 doz rows.

The rows or arrangement of structure are
new and unnoticed for first time in
this specimen, which was a clean
empty shell.

Small flask like forms, with circular cancellated shell in which cancelli differ greatly in proportion to size of shell. One 14-17-3 with neck 3. Larger cancelli on body 1 to $1\frac{3}{4}$ or nearly 2!



More oval forms of variable proportions & with neck variable in length width & with mouth variable in proportion.

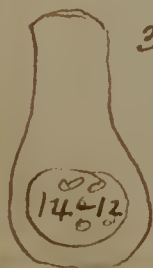
Giant forms occasional.



One nearly filled with sarcode containing multitude of yellowish globules from 1 to 2 diam.

Shell 30-15-7 with ($\frac{1}{5}$)

An empty shell with faint brownish hue. Basis of structure finely granular with circular cancelli appearing only on the body of the shell. This was the usual structure in the large forms. One 35-20-8- ($\frac{1}{5}$)



32-17-8 Structure as above

Sarcodae contracted to form as an oval granular colorless ball with scattered yellow & brown food globules.



35-20-8- Aspericulum. Sarcode
an oval mass 24-16 white granular
with yellow & brown food globules.
Shell with minute circular cancellate
structure, ringed at borders with some
square plates. (1/5)

Trinema acinus abundant
of various form, size, & appearance
mostly empty shells. (1/5)

one 8-5-2 with distinct nucleus 2

one 7-5-2 containing 6 spores from 1 to 1 1/2

Two in same field appeared thus

12-5-2 and 9 1/2-6-2



Euglypha brachyata 5 or 6. teeth

to mouth bent inwardly; scales appear
diamond like 17-6 1/2 - is between



prints of mouth. Only one spine 7 long

Euglypha Small spineless forms
numerous.

Euglypha. Biverte forms rare & small.

Euglypha browni. = Assulina seminulum

Brown, no neck, circular 12-12-4 (1/5)

Frequent ranging from oval to nearly circular, with & without a short neck & from colorless to pale or dark brown.


One 14-12-4 pale brown
14-12-4 dark brown with darker circle at the neck.


12-8-3 pale brown, oval, no dark circle at neck.

Heleopera? Occasional dead shells of a purplish brown line, some with & others without dirt or sand at fundus. 15-13-7; 18-15-6

Diplogia pyriformis. Occasional; shell of dirt & sand. One 14-8 - neck & mouth 4.

D. constricta rare - of fine sand & dirt 13-8-4 under view. (1/5)

D. hemispherical, brownish dirt & sand; with trilobate mouth  22 hours 1.5 high. Rare. = D. aculea.

D. indurata *  Pale brown chitin on some especially along line of the oir spines 16-14 mouth 4.
* Bentropys aculeata.

A mound with more or less
culture beneath 20-16.



Mound with sinuous border 5 by 4.

Principal plants observed on the
top of Brown Mt. in vicinity of the
Leland Hotel.

The meadows covered with grass
mainly *Deschampsia compressa*.
Other portions mainly covered with
Rhododendron Catawbiense, at
base of which are on rocks abundance
of *Leucophyllum laurifolium*. In many
places great clumps of *Polytrichum*.
Other plants *Oldenlandia serpyllifolia*,
Oldenlandia purpurea, *Veronica officinalis*.
In the meadows & at edges of woods
abundance of *Veratrum viride* in
most vigorous condition & now in flower.

The neighboring forests mainly of
Pinus strobus = White or Balsam Fir
& *P. nigra* or Black Spruce, with
some *Sorbus americana* or Mt. Ash.

The floor of the forest with mottled
rocks of Alvers & of the chief shrubs
Rhododendron maximum & *R.*
Catawbiense. Ground covered
with spongy carpet of *Hypnum*
splendens, *H. triquetrum* ~~& *H. laevigatum*~~
H. cristata-castrense.
with profusion of *Oxalis violacea*
in flower. Abundant *Smilacina*
lupulina with *Clintonia borealis*,
& frequently fern = *Aspidium*
spiculatum. On the cliffs grew
Saxifraga leucanthemifolia &
in cliffs the *S. Careyana*; also
Genum radiatum, & *Agrostis*
repens. *Aster flexuosus*.

Lower on the slopes grew *Azalea*
calendulaceum, *Menziesia* etc.


Slopes of broken rocks, prostrate
trees in all stages of decomposition
carpeted with *Hypnum*. On
some of the wet cliffs beautiful
green & red patches of *Sphagnum*
with the *Hypnum*.

Hypnum splendens 

Hypnum crista-castrense 

Hypnum trigetum 

July, Tuesday 13th. Exam. of water
pressed from *Hypnum*:

Nehalæa flabellulum. The most
frequent form with faintly yellowish
or colorless shell thinner than
limb, nearly circular in outline
usually with a short neck or
rim to the mouth. Shell minutely
cancellate sometimes distinctly,
sometimes obscurely & occasion-
ally so indistinct as to appear
absent or entirely structureless.
A fine often distinguish-
able in each side just
above the neck, the border of
which distinctly thickened 

14-15-4

14-15-4

14-16-4

14-15-4 with

sarcocoe encysted, globular 10 diam.
mouth ensheathed by opercle.

13-13-4

13-14-4 neck

nearly obsolete. Neck usually $\frac{3}{4}$ to 1.

11-11-3. sacode with nucleus 2

11-12-3 do do "

11-11 $\frac{1}{2}$ -3 14-15-4.

14-14-4 neck 1 long

16-16-5 neck 1 long



Shell yellowish, obscurely punctate. Closed with operculum. Sacode encysted, colorless but with brownish food balls - 13 diam

14-13-3

Passing into *N. nummata* which is much less frequent by oral forms than 15-14-3 neck 1 long. Shell minutely cancellate.



Another 14-13-3

" 12-11-3

" 13-13-4

Star shaped forms

12-7-3

11-6-2 $\frac{3}{4}$

11-7-2 $\frac{3}{4}$



The fluke forms cancellated with
Cancelli of very variable proportion,
some of smallish shells with propor-
tionately large cancelli & large shells
with very minute ones, often almost
punctate only.

Occasional shells apparently of
Noelsepore, always purplish brown
and with variable proportion of
incorporated sand = *No. petricola*




15-13-7

16-13-6.

Difflupia contracta - rare. Shell
of yellowish dirt & sand.

12-12-



Difflupia  = *D. globulosa*.
rare with circular
mouth, hemispherical shell
10 broad mouth 4. And smaller

Associates abundance of *Rotifer*
vulgaris, a few tardigrades,
a few sharply annulate *Anguil-*
lucos.

Eggypha bounnea 12, 12, 4 nearly
circular. Brown one 6-5-1 1/2.

Small spinelless Euflypha

one 10-8-2 1/2

Trinema acinus - in variety of form.

He wrote Euflypha 10-7-2.

In Sphagnum water:

Achela numata 14-13-4 neck 1

Shell of minute elliptical
disks.

Spinelless Euflypha with 8 to 10 teeth?

8-5-2

with six teeth 9-4-2 9-5-2,

Euflypha brown 7-6-2
Asculina seminulum

Euflypha - cristata? without
spines - few teeth 9-2-1 1/2

Trinema. Sometimes with minutely
but obscurely punctate shell.

12-5-2

8 1/2 - 6 - 2 1/2



Early in the morning (10.30 am),

at

C.

Juniperus communis - regular plant

Abies concolor

Sorbus

Malus

Malus vulgaris

Prunella vulgaris - common

Prunella

Prunella

Prunella stricta - very common

Prunella vulgaris

Prunella vulgaris

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris - common

Prunella vulgaris

Prunella vulgaris

Prunella vulgaris

Alnus growing with the
Rhododendrons in some places.

selago.

Rumex acetosella *R. crispus*.

Sisyrinchium Bermudianum.

Cacalia reniformis

Thalictrum

Senecio aurea var.

Cerastium viscosum

Pedicularis

Eranium maculatum

Hypericum *H.*

Viola cucullata. *V.*

Acer spicatum

Lower: *Fagus*.

Betula

Lower: White Oak; Chestnut.

Liriodendron

Aristolochia siphoc.

Snow Bird, *Junco hyemalis* frequent
nest built on ground; spotted white eggs.

Noticed Buzzard, Blue Jay, Wren.

Leimophrys carolinensis

Helix

Large Black Ant under Stones.

No 'White ants' observed.

Hesperomys Common

Noticed a Shrew in the forest
July, Wed. 14, left Clowland &
Roan Mt. for the "Forge" at foot
of Roan Mt. 7 m. below, and staid the
night. Primitive Forge. Reduction of
the Magnitude of the vicinity. Crushed
to powder & mingled with charcoal, then
fused into a partly mass in a common
forge; then taken on end of a bar and
submitted to the tilt hammer and
reduced to a bloom. Obtain about $\frac{2}{3}$
the iron of the ore or less. Blast
produced by descent of a stream of
water through a wooden tube.
Vegetation in the vicinity of the Forge very
like our own in similar positions.

July 15th Thursday. Stage to Johnson City
Finding of *A. parvulum* on limestone near
the latter place. Several caves in the
same in the vicinity. Put up at
Hotel of Mr Hess opposite the
station at Johnson City.

July 16th Friday Left early in
morning via Bristol for Lynchburg
and stopped at Arlington Hotel.

July 17th Saturday. Trip down Lynch. & Shenandoah
Railroad in company with Mr Dorem
to visit Iron Mine - Magnetite ore
bed very irregular, in mica schist.
Said to be well adapted for steel & hence the
importance of the mines at Harrisonburg.

July 19th Mond. / Wed. Left via rail to
Charlottesville & then by Chesapeake & Ohio R.
via Staunton to White Sulphur Springs
Green Briar Co., Va. At Staunton met
by Maj. Gen. H. H. H. Ed. of "The Virginian"
who accompanied us to Skyline. On route
passed over in succession Loup River in
Andean rocks, Edinburg limestone (Linton)
Helderberg limestone, Oriskany, mainly con-

sisting of beds of limonite; followed by
immense development of Marcellus
shales (Devonian). Beautiful scenery,
number of tunnels on railway; of which
two of great length. Pan trains of cars
loaded with lustrous coal and Cannel
coal, from the coal measures further
west. The Marcellus shales highly
lustrous; Maj. W. reported 20% of
lustrum. The local drift containing
boulders of the Silurian sandstones.

Arrive at White Sulphur Springs 10.30 A.M.
Hotel beautifully situated surrounded by
the mountains. Tuesday at White
Sulphur Springs. Dr. Porter & Mr. Mechem
Leave for 'Hawk's nest'.

July 21st, Wed. Leave W. Sulphur Springs
at noon for Huntington. Part way
pass through valley of New River and
Kanawha, through the Coal Measures.
Magnificent & wild scenery, especially
from Hawk's nest to Kanawha Falls.
High cliffs of sandstone in horizontal
beds. Large blocks of which strewn in

Equivalents of the Palaeozoic Formations of Va.

<u>Up. Carb.</u>	Up. Barren Group	XVI	Scrub
	Up. Coal Group	XV	"
	Low. Barren "	XIV	"
	Low. Coal "	XIII	"
	Great Conglomerate	XII	"
<u>Mid. Carb.</u>	Green River Shales	{ XI	Unstratified Shales.
	Green River Limestone		" Limest.
<u>Low. Carb.</u>	Montgomery Ints +	{ X	Vespertine.
<u>Coal Measures</u>	Coal Measures		
<u>Devonian</u>	Catskill	IX	Ponent.
	Chemung	{ VIII	2 } Bergent.
	Portage		
	Genesee		3 } Cadent.
	Hamilton		
<u>Silurian</u>	Marcellus		
	Oriskany	VII	Meridian
	Low. Helderberg	VI	Primeridian
	Potomac	{ V	} Sculent
	Niagara		
	Clinton		
	Medina	IV	Sargent
<u>Up. Cambrian</u>	Madison River	{ III	Metam.
	Utica		
	Frenton		
<u>Mid. & Lower Cambrian</u>	Chazy	{ II	Survival
	Levis		
	Calceferous		
	Potsdam	I	Primal

confusion on the river shores and in its
bed. Much Mistletoe observed growing
on Birch, Elm, &c. in the river banks.
Arrive at Huntington about 9 P. M.,
situated on the Ohio R.

July 22 Thursday leave latter 10 A. M.
for Hanksville, about 100 m east &
put up at the Little Hotel there. In
afternoon stroll along the cliffs
of sandstone. *Tripsacum dactylodes*,
Linum catharticum, *Panicum virgatum*,
Aster sp., *Juniperus*, *Passiflora lutea*,
Geranium radiatum, *Chimaphila*
in fruit, etc.

July 23 Friday leave for Staunton & arrive
at 1 after midnight.

July 24 Saturday. Staunton visit Maj. Jed.
Hotchkiss. 11 A. M. Leave for New Market
on Balt. & Ohio R. Rich valley of the
Shenandoah R. Village of New Market
2 m. from the R. R. station. Afternoon
take stage 14 m. to village of Luray.

July 25 Sunday - Luray.

July 26 Monday Visit to Luray Cave
about mile distant from the Village.
Descent at the entrance. Cave following
mainly the direction of the nearly
horizontal strata of Silurian
limestone. Cave extensive and
remarkable for the beauty, variety,
number & size of its stalactical
formations. Animals observed: a
small spider numerous, also egg nests
of same; a minute white nematode-
worm insect - resembling a Poreia or
an Atrypa; these were frequent. Also
saw many specimens of a Calypso
Julus. A large rat is said to have been
observed, probably the Neotoma floridana.
No water in the cave, i.e. in any quantity. No
Crickets, Cray fish, or fish!

Afternoon. Leave Luray & return to New
Market.

July 27 Tues. Visit New Market Caverns
4 1/2 m. from the village. The Cavern is
for most part a vertical passage in

the Silurian limestone. It is not so vast,
nor the apartments so capacious as
in Luray cave, nor are the stela-
cital formations so varied and
numerous. It is a dryer cave.

Same day leave New Market, for
Harpers Ferry, and thence to "Relay
Home", between Washington & Baltimore.
July 28th Wednesday return home
arriving about 2 o'clock.

Cost of the trip, of myself, wife, & child
about \$300. Free passes were kindly
furnished for the whole party by application
to Mr. Isaac Hinckley Pres. of the Phil. Md.
& Balt. R. R. The travel comprised nearly
18 hundred miles of which nearly 200 were by
stage.

The passes furnished were as follow:

Phila to Balt. & return by P. M. & B. R. Co.

Balt. to Quantico & do by Penna. R. Co.

Quantico to Richmond do by Rich, Fred. & Potom. R. Co.

Richm to Salisbury do by Rich. & Danville R. Co.

Salisbury to Asheville by West N. Car. R. Co.

Wolf Creek to Bristol by East Len, Va. &
Georgia R. Co.

Fern Bristol to Lynchburg at $\frac{2}{3}$ rate = \$6.15
Lynchburg to Charlottesville & return, by Wash.
City, Va. Midland & Great Southern R. Co.
Charlottesville to Huntington & return
to Staunton, by Ches. & Ohio R. Co.
Staunton to Balt. & return by Balt & Ohio R.

At New Market met with Dr. Heubel, uncle
and nephew, both graduates of the University.
A son of the former met at Staunton.

Trip to Delaware Water Gap Cave.

Aug. 3 Afternoon to Eastern to Dr. Porter's

Aug. 4 Took 10.45 Rail to Stroudsburg
arriving about 1 and met by Mr
J. Dunkin Parot. Took quarters at
'Barnett House'. After dinner went to
home of Mr. Parot & examined collection
of bones etc. from the 'Cave'.

Numerous fragments of shafts of long
bones of many animals, including birds.
Numerous teeth, jaws, & parts of skulls
as follows:

Deer, Elk,

Wolf, Fox, Skunk, Weasel, Wild Cat.

Marmot, Porcupine, Beaver, Squirrel

Arvicola, Raccoon,

butelume of Snakes, Carapace of Turtles.

Portions of upper and lower jaws, with
deciduous & permanent teeth of a

Dicotyles nasutus.

Incisors and molars isolated of a

Castoroides ohioensis.

Several bone awls, and a
stone lance-like implement
of red slate.

A flint and a broad leaved tomahawk?

Afterwards visited the 'Cave' a
few miles from Stroudsburg and
Del. Gap. There met Mr. Knipe
& Brodhead.

Opening of the cave in the
face of a limestone cliff, forming

the arch way of a beautiful anticlinal axis. The cave was nearly filled with a clay deposit, evidently the sediment of a stream. Clay reaches to within a few feet of the roof. On the clay a stratum of about one foot of dark brown friable mud. The bones, implements &c. found in this mud, which in many places is more or less separated by a thin stalagmitic floor from the clay. Nothing found in the clay. Near entrance of cave some breccia adherent to roof containing bones, seeds, & charcoal. Bone exposed between 1 & 200 feet by removal of the clay, making a passage, (not however reaching the true rock floor) in which man may walk erect.

Unio complanatus. Helix

Evening with Mr. Parot &c.

Aug. 5. Thurs. Drive through neighboring country in comp. with Mr. P. & Dr. Porter. Curious insect nests of eggs on flat rocks of Pokons Creek, & parasitic beetle of the same. Dined at Del. Water Gap. with Mr. Brodhead, Mr Parot, Mr Linpe & Parot. Evening returned home.

The cone shell on exam. appears to be Corvus tornatus Brod. = C. interruptus Gray found at Guatemala & other parts of Central America. Sp. less than inch long. with spire broken off, & axis broken through so as to allow of being strong. Is it a true indian relic? Next Coast shell.

Aug. 22. Remains of mammals observed to date in the Collections.

Lynx. *Lelis canadensis*
Wolf. *Canis lupus* - *C. occidentalis*
Gray Fox. *Vulpes virginianus*.
Skunk. *Mephitis mephitis*.
Weasel. *Putorius ermineus*.
Raccoon. *Procyon lotor*.

Elk. *Cervus canadensis*.

Deer. *Cervus virginianus*.

Deer. Teeth &c. Intermediate in size
to the former two animals. *

Prism. *Prism americanus*

Horse. A first upper milk molar
of a new born animal.

Distyles nasutus. Extinct. Portion
of upper & lower jaws with teeth,
of a young animal.

Castoreoides olivensis. Incisor and molar

Gray Squirrel. *Sciurus carolinensis*.

Ground do *Tamias striatus*.

Woodchuck, *Arctomys monax*.

Beaver. Castor fiber = *C. canadensis*.

Wood rat. *Neotoma floridana* =

N. magister, Baird.

White footed Mouse, *Hesperomys leucopus*.

Meadow Mouse, *Arvicola riparius*.

Porcupine. *Erethizon dorsatus*.

Gray Rabbit. *Lepus sylvaticus*.

Musk rat. *Fiber zibethicus*.

Mole. *Scalops aquaticus*,

* Woodland Caribou. *Rangifer Caribou*.

Dusky Bat *Vespertilio fuscus*. *V. carolinensis*
Little Brown Bat, *V. subulatus*.

Bear

On the Bone Caves of Penn^a. S. F. Baird
Proc. Am. As. Adv. of Science II. 1849,
352, Boston 1850.

Remains of Durham Cave

Moose

Deer

Bison

Beaver

Porcupine

Woodchuck

Gray Squirrel

Muskrat

Rabbit

Neotoma magister

Gray Fox

Skunk


Raccoon

Bl. Bear

Box turtle

Snapper

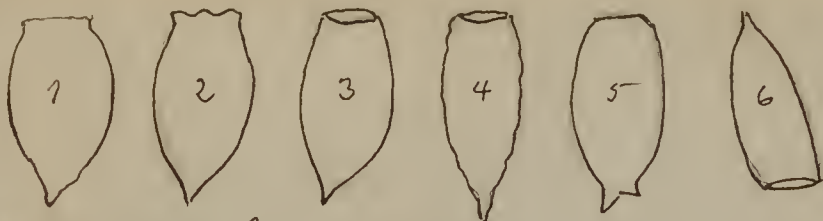
Sep. 2/80 Letter received from S. A. Forbes of
Illinois State Laboratory of Natural History
Normal Illinois, stating that "The young of
some Catostomidae (*Hypentelium*, *Myxostoma*
etc) have the intestines packed with tests of *Diffugia*
& *Arceella*, especially the former. Later sent
two slides.

Slide with food from intestine of *Myxostoma*
macrolepidotum from Mackinac Creek.
contained following: Most numerous form:
Diffugia globulosa. Shell of rather coarse
sand with larger grains at border of mouth.
 No. 1, 2. = 0.18 long 0.162 broad; at truncated or
oral end 0.102 wide. Oval with oral pole truncate.
No. 3. = 0.18 long 0.156 broad; at oral end 0.102.

No. 4. = 0.156 long 0.15 broad; truncated oval end 0.072
No. 5 = 0.174 " 0.156 " ; " " " 0.09
No. 6 = 0.198 " 0.168 " ; " " " 0.096
No. 7 = 0.198 " 0.21 " ; " " " 0.108

Second form -

Diffugia acuminata, mostly slightly ency-
metrical, some with a slight neck, straight or
slightly exserted; one seen with two points to summit
usually of minute stipes & comparatively smooth.
One oblique form No. 6 approaching *D. cristata*.



- No 1 0.18 mm long, 0.108 broad, 0.06 at oral end
 No 2 with slightly excited neck indelant at broader
 0.18 mm long 0.108 broad, 0.06 - at oral end
 No 3. 0.18 long 0.114 broad 0.048 at oral end. 1, 2, 3, all of fine
 stones.
 No 4 of coarse stones 0.198 long 0.102 broad, 0.06 at mouth
 No 5 0.18 long 0.114 broad, 0.06 at oral end.
 No 6. Stands 0.162 high 0.09 broad, 0.06 at mouth.

Food of *Erimyzon succetta*. Apparently
 the superficial sediment of the water,
 contains entomostraca, rotifera, dipterous larvae,
 desmids, diatoms &c with following Rhizopods -
Amoeba vulgaris. var. with pitted shell


A. discoides. 0.18 wide, mouth 0.036, height?
 " 0.15 " " 0.054, " ?


Diffugia lobostoma, with trilobed mouth most
 common form. 0.09 long 0.078 broad mouth 0.03

Several of same size, others slightly smaller.

D. globulosa 0.15 long, 0.138 broad, oral end 0.078.

D. pyriformis 0.42 long 0.21 broad, at mouth 0.09.

An *Amoeba*-like test 
 0.105 broad, mouth 0.03 broad, height? Form of *Amoeba*
discoides but no structure of *Amoeba* detected.

Shell of nearly colorless or pale yellowish chitin,
incorporated with minute darkly outlined granules
isolated or scattered and in groups of 1 to 5 often in
straight rows  a
row of five measured 0.009 long. Only one specimen
in slide of food of *Myxostoma macrolepidostomum*.

May 22, 1881 Human blood examined.
Red corpuscles ranged from 2 to 3 div diam
with $\frac{1}{2}$ to egg size Zentmayer. A corpuscle
of 3 div, was 1 div. thick.

The corpuscles mostly 2 and 3 division,
a greater proportion of the former, and
with comparatively few of intermediate
size. Generally when differed were a
little more than 2 or full 2 or a little
more or less than 3 generally full 3.

~~are~~ rarely $2\frac{1}{2}$ or three elements. Remarkable
absence of white corpuscles. From a young
woman, a patient with Elephantiasis of
the lower limb - Case of Dr. J. S. Morton

Light colored spider frequent under dried
sea weed above high tide on beach at Cape
May etc. *Lycosa littoralis*, probably a
variety of *L. riparia*.

To ΠΡΩΤΙΟΤΟΝ, the first of all, Protista
or primordial
μονογενῆς simple = - - - - Monera
Cyctodes, or Cellinae = Plasma masses
without nucleus.

Gymnocyctodes or Cyctodae nudae =
naked cyctodes, or those without membrane.

Lepocyctodes or Cyctodae membranaceae =
cyctodes with investing membrane.

Cycta, or Cellulae = Cells, or plasma
masses with nucleus.

Gymnocycta or Cyctae nudae =
naked cells, or nucleated cells without
investing membrane.

Lepocycta or Cyctae membranaceae
= Cells with membrane & nucleus.

After Haeckel.

Sept 1. 1881

Weighed a Mouse = - - - - 193 grs.

Brain = - - - - 5 1/2 do.

Proportion 1 to 35.

July 1881 Trip to spend summer. At
F. Grouse's Sunset Home, South Mountain
about 2 m. from Nemoursville, Berks Co. Pa.
The mountain ridge in vicinity con-
sisting of gneiss, granite & syenite,
with several trap dykes,

Gneiss - of quartz and feldspar with almost
no mica or other constituent, very compact
and regularly stratified with no
contortion or folding; often obscurely
stratified.

Granites varied - mostly of quartz & reddish
orthoclase; others of these with a little
mica.

Syenite - black - mostly of hornblende, with
the feldspar & quartz in fine grain.

Basaltic trap - A dyke through the
gneiss on the hill above Grouse's home;
another in close proximity to Walter's
Sanitarium, on the opposite ridge.

The high summit of the South Mt.
about 2 miles or less from Grouse's & about
4 or 500 ft higher than latter apparently

a quartzite rock of the Potsdam formation. The crevices to the summit above the ridge appeared to be all composed of the latter. At its base there appeared to be a thick vein of milky quartz.

Traverse of South Mountain, east side about 1 mile below Grouse's & other hotels, of Potsdam sandstone of varied constitution, but mostly quartzite, white or grayish and remarkably jointed generally in two directions obliquely vertical to the stratification.

In the little valley below Deffen & Wernich's the Potsdam consisted of a very compact jointed quartz, and appeared to contain a vein of bright yellow & red granular looking crystalline quartz passing into Jasper, yellow & red, many chips of which strewn in the forest, looked like remnants of stone implements.

Near Sheridan Station, on Mr. Illip's

Place the Potsdam contained a
friable light red stratum, and
near by, found a block of the
sandstone with *Sedithus linearis* -
the only specimen of the fossil
noted.

Mature male mouse	356 grs	brain	6 1/2 grs
Small do do	193 "	"	5 1/2 "

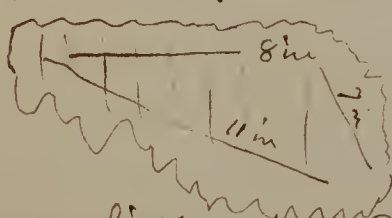
Specific names.

acuminata	compacta	integra
angulosa		inconspicua
aequalis		
angustata	dissimilis	incurva
affinis	dubia	inflexa
anuligera	diaphana	
aspera	dur	lepida
appendiculata	elliptica	lunata
	emarginata	
acuta	elegans	limosa
alata	formosa	laevis
brevis	firma	laevissima
cristata	fusca	linearis
cuspidata	genuflexa	limpida
carinata	gibberula	lacustris
crassa	gibba	lanceolata
convexa	grigas	latissima
clavata	guttulifera	latiuscula
emistriata	gracillima	lata
cardinalis	granulata	
capitata	gracilis	maxima
crassa	hyalina	microstoma
crassula	inflata	minor
cincta	imperialis	minima
columnaris	incurvata	minutissima

<i>mutabilis</i>	<i>radiosa</i>
<i>major</i>	<i>rhombica</i>
<i>neglecta</i>	<i>spectabilis</i>
<i>nana</i>	<i>subvolvul aris</i>
<i>nodulosa</i>	<i>splendida</i>
<i>nodosa</i>	<i>sculpta</i>
<i>nobilis</i>	<i>signata</i>
<i>nummularia</i>	<i>subtilis</i>
<i>ovalis</i>	
<i>oblongella</i>	<i>truncata</i>
<i>orbicularis</i>	<i>tumidula</i>
<i>obtusata</i>	<i>tenella</i>
	<i>tumens</i>
<i>pulchra</i>	<i>tumida</i>
<i>paradoxa</i>	
<i>parva</i>	<i>utriculus</i>
<i>parvula</i>	
<i>pygmaea</i>	<i>varians</i>
<i>pusilla</i>	
<i>paludosa</i>	
<i>pusculata</i>	
<i>pectinatis</i>	

Oct. 1881 Mr. No. Co. Liechtenhaler, exhibited
a specimen of a well worn last lower
molar of *Elephas americanus*, found
by him in gravel at 8 ft depth
in vicinity of Elmira, N. Y.

Oct. 29, 1881. Letter of J. Cushman giving
notice of a molar of an Elephant,
apparently last lower molar.



Intervating surface 8 in
by 4 in. Found in
a "hard brown earth on

the Little No. R. Montana, T. about
90 m. from Spearfish City, Dakota T.

Development of microscopic organisms
in the

July 5th 1882 Trip to Lake George, Wife, Allie
& Miss Hess in company.

P. A. R. R. 1 p.m. for N. York, Delosses Ferry.

Steamboat for Albany from just above latter.

Ticket to Glenn Falls \$11.90 State room \$2.50 each

Arrived in Albany at 5 a.m. Omnibus to Delavan
house for breakfast. Train for Glenn Falls at 7.

Thence to Caldwell's L. S. & then steamboat to
Bolton fare .50 Put up at Bolton House,
July 6th. Mr. Brown proprietor.

Thursday July 27th left Bolton for
Albany, thence to Bolton, via Albany &
Bolton R. R., 202 m, fare \$4. arrived at 10
p.m. & put up at Parker House. Next day
28th at 11.20 a.m. by Eastern R. R. to

Glenshire about 25 m. fare \$1. Put up
at Bass Rock House, Bass Rock, Glenshire
Mass. A rocky cape stream with large
granite boulders. Left Aug. 9th.

Aug. 20 Trip to Salem about 20 m from Bass
Rock. Visited Essex Institute, where saw
Dr. Wheatland, with whom visited the
Peabody Institute & Museum. Good
collection especially of Corals & Sponges.

Loilester = *Homarus americanus*

Prawn of Smith = *Penaeus setiferus*

Prawn (small) = *Palaeomonetes vulgaris*

Sand-shrimp = *Crangon vulgaris*

Mud-crab = *Hoppea talpoides*.

Eupagurus pollicaris (Lape) Hermit

" *ingimarius* do

" *Bernhardus*

Callinectes hastatus (edible) Blue-crab.

Gelassinus pugnae. Marsh Fiddler.

Sand Crab = *Ocyrode arenaria*

Lady " = *Platynychus ocellatus*

Spider " = *Lilimia canaliculata*

Rock " (Common) *Cancer irroratus*

Mantis-shrimp *Squilla empusa*.

Bolton, Lake George July 24. Dine with Mr.

Thompson to Warrensburg. In vicinity found
at road side an enormous cubical boulder
probably 20 ft in diameter.

Lake George July 20th 1882.

From a "Rock bass" Many white
Tapeworms, Taenia from 8 to 12 inches
in the stomach. Many small
Echinorhynchi, white, 6 to 14 mm
in length, in stomach and intestine
Echinorhynchos. White, curved, cylindrical
rather thicker in front, obtusely rounded
behind. Proboscis cylindrical, with 24
circlets of hooks. Proboscis 1 mm long.
Body 0.75 mm thick. *

Taenia Head prominent,
with four circular bothria, no hooks;
neck none, or divisions following imme-
diately after the head. A central prominent
papilla to head, surrounded immediately by the
four circular bothria. Head 0.5 long
by 0.625 broad. Bothria 0.3 diameter.
Posterior segments, transversely elliptical, from
2 to 3 times the breadth of the length, & half the
thickness. Posteriorly 2 mm wide.


* Largest measured 14 mm long 1 mm thick with
proboscis 1.25 mm long & with 24 circles hooklets.

Rock Bass = *Ambloplites rupestris*

Barro Rocks, Gloucester Mass. Aug 1, 1882.

Rose colored Nemertean.

Long, slender, bright red, cylind-
roid, flattened from above downward, in
transverse section elliptical about
twice as ~~thick~~ wide as thick. Bright
rose red above, lighter beneath and still
lighter laterally. Head or upper lip
conical, compressed from above downward;
mouth longitudinally elliptical. Pileus
long & narrow. Length from 5 to 10 inches
by from $1\frac{1}{2}$ to 3 mm wide. In contracted
condition about 5 in long, 3 mm wide and
 $1\frac{1}{2}$ thick. Elongated 10 in long $1\frac{1}{2}$ mm
wide. In sand of Mya beds, just
below Barro Rocks. In same beds
Nereis.

Lip of head or lip lighter 
in color; length of head 3 to 5 mm.
Eyes none.

Mauricia *Sp. nov.*

A small worm living in saccotubes matted in patches on the rocks about attachment of *Fucus vesiculosus*, abundant on Bass Rocks, between tides.

Body of eleven setigerous segments besides the head, all except the first are supplied with pedal hooks.

Head with six arms provided with numerous narrow cylindrical ciliated tentacles, a broad semicircular lip above, which the animal secures. Several palp-like appendages to the mouth. A pair of eyes. Caudal segment with a dorsal flattened half oval prolongation with a conspicuous pair of eyes.

First segment with no hooks; a pair of fascicles of 6 or 7 setae each.

Segments from 2d to 4th. with a pair of fascicles of 8 or 9 hooks, & a pair of fascicles of 6 or 7 setae each.

Segments from 5th to 8th with 6 to 7 hooks in each fascicle and 6 to 7 setae in each fascicle.

In segments 9th to 11th 4 or 3 and two setae to each fascicle; and hooks in curved, transverse, comb-like rows, from 20 to 28 in each row.

The setae generally, long, abruptly bent & tapering to a fine point, with the distal portion provided with a feather like vane which is finely striated; there less well developed, usually one or two in a fascicle with a comparatively short vane.

Hooks of the anterior eight segments with a curved manubrium, ending in a short robust curved hook, often bifid or furcate on the dorsum and often striate or feebly dentate. In ~~erect~~ fan-like fascicles.

Hooks of posterior 3 segments in close transverse semi-circular comb-like rows, numerous, minute, each ending in a minutely dentate blade.

Blood red. There appear to be three principal longitudinal vessels extending along the course of the

intestine. The latter is brownish yellow and narrowest posteriorly. In the last pair of segments when dilated it exhibits active ciliary motion extending into the anal aperture.

The worm deposits eggs within its ~~tubule~~ where they are hatched, & the young are retained for some time.

The cephalic eyes exhibit a vitreous humor enclosed by a choroid. In several of the specimens, one of the two eyes was encircled with two choroids. The eye-like spots of the caudal segment appear to have the same construction as the true eyes.

Worm with extended tentacles measures about 3 mm to 4 mm. and $\frac{1}{4}$ mm thick. Young ones measured 0.12 mm long by 0.016 wide.

Setae from 0.12 to 0.24 mm long.

Anterior hooks 0.08 mm long.

Posterior hooks 0.04 mm long.

Nematoid. Bar Rock Aug. 3. Among sand
tubes of *Halimniscus* at roots of *Lucas*.

Body cylindrical, white; head tapering
surmounted by several short points
and encircled by 8 pointed barbs
in pairs. Posterior end incurved;
tail conical, curved, ending in
an elliptical club-like extremity.
Apparently with a spiracle from
the generative & anal orifices -
See figure. A row of hairs on each
side between the two orifices.

Length 9 mm by 0.16 mm wide.
Length of tail from anus 0.24 mm.

Oesophagus cylindrical, followed
by the cylindrical intestine of but
slightly greater diameter. Male?

Nematoid with preceding Aug. 4th
cylindrical, white; head tapering, blunt,
with a circle of four small barbs.

Pharynx with an armature of teeth.

Posterior end feebly incurved. Tail short
conical, blunt. Oesophagus long

cylindrical; intestine cylindrical. Gen.
aperture not detected. Length 1 cm.
breadth 0.2 mm. See drawing.

Myctophorus of *Julus marginatus* at
Lake George - measured 0.1 mm long by
0.06 broad

Actinophrys Eichhornii. Sep. 2, 1882
From Fairmount with *Pumotella*. &c
Body 0.26 mm, rays generally about 0.2 mm
some even three times as long or 0.6 mm.

Lake George, July 10, 1882.

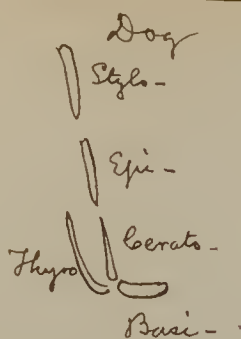
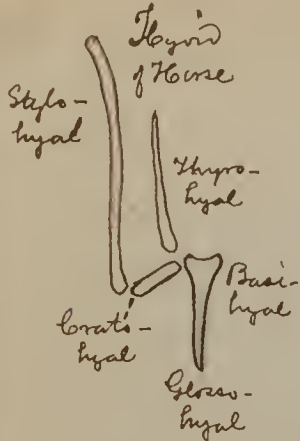
Mr. Bailey, Jeweller of Philadelphia
gave me the following information in regard
to the gold images of Chinese formerly offered for
sale by his firm & that of Caldwell some years
ago in the city. They were consigned from
Central America to Mr. H. Thierist of New
York, from whom they were purchased.
Among the objects there were about 100
circular plates of thin gold about 10 or 12
in in diameter, apparently hammered out

of native gold, slightly disked, each weighing about 2 oz, 22 carats fine, no engraving or other marks on the plates. They formed a pile about 8 inches high. As there was no sale, they were sent to the Philadelphia mint and melted up.

Also informed me that he had seen in possession of M. Mozenna, a dealer, in Paris, 8 or 10 diamonds of oval or olive shape, faceted and highly lustrous, each from 4 to 10 carats, which were perforated through the axis with an almost imperceptible hole and so fine as not to admit the passage of a human hair. Come from Pekin and obtained during the English war with China.



Boulder at Barr Rocks. Mass.
19 ft long. 10 ft high 14 ft wide one end & 8 ft at the other end.
August 1882.



July 26, 1883 on Cirsium lanceolatum
 or common Thistle noticed multitudes
 of bicardellus, on under sides of leaves,
 harboring numerous large black
 ants. Bicardella with two carinate
 protuberances on back, with lateral
 brown maculae. Mullingford Del. Co.

Aug. 30 nearly all reduced to dust over the ground.

Aug. 29. On meadow near the creek, but on the
 hill side observed, scattered over a patch of
 ground of about 8 in. square, 11 masses of
 Ethalium septimum? ranging from $\frac{1}{2}$ in. to
 2 in. in diam, mostly half oval, some of several
 oval lobules, the largest one irregular, cream
 color, pulverulent, with protuberances of hypothekus
 brown, interior black. Were elevated a little
 above the ground and dead leaves but mostly
 adherent to living plants: 1 on a core, two on
 sticks.

Strawberry leaves, & one on end of a stick.

Wallingford, Del. Co. 1883

Aug. 1. On the Black Mulberry *Morus nigra*. On under sides of many of the leaves, were many flies, *Musca*, resembled house fly, but much larger, attached by a fungus parasite, perhaps Empusa, cream colored, of irregular cylindrical rods or tubes of variable length, and elliptical spine-like bodies. All white or colorless, with fine granular contents and clear oil-like globules, of which there were usually two in each spine-like body.



Spine-like bodies about 8 long 4 wide, or from 7 to 9 long by $3\frac{1}{2}$ to 4 wide. Tubes 4.0 long by 3 wide - also shorter & longer. Small Black-neck No 7.

August 1. On Swarthmore hill in woods
on a stump of Ash. found a Trichia,
dark ferruginous brown, mostly in fascicles
on short stems, a few simple. Head ♀ oval,
Capillitium apparently of one interminable
lustrous thread, without branches or
anastomoses, with double spiral line &
minutely echinate, ferruginous red in
color, less than 2 μ diam. Spores of same
color but little lighter 3 μ . diam. No 10.

On same stump Acrecia cinerea.
Gray ash-colored, about 2 mm long, head ovoid
cylindrical. Capillitium of retiform, colorless
lustrous, transversely ridged threads. Spores $2\frac{1}{2}$
or from 2 to 3 μ diam No 10 colorless, depressed
on one side. Stem distinctly cellular,

On same stump abundance of Stemonites
fusca in dense groups, individuals 14 mm
long. Head smoky brown, cylindrical acute at
summit. Stem, column & capillitium black.
Spores brown, 3 μ . diam No 10.

July 26. Bement woods. Cribraria
argillacea. Abundant on a block
of decayed wood. Multitudes scattered.
Beads 2 mm high. Heads globular.
Light brownish clay colored. Stems
reddish brown. Persistent portion of the
peridium yellow, radiate striated. Re-
ticulum above with stellate nodes,
yellow. Spores yellow $2 \pm 2\frac{1}{2}$ with No 10

Physarium album July 24 Bement woods
on broken end of a decayed tree branch.
Scattered in patches. about 1.5 mm high.
Head white, oblate obovoid, black within.
Stem cream colored. Spores brown with
an anasthytic hue in mass. 3 div No 10.

Arceuthobium punicea July 18 growing on
dead branch of *Morus rubra*
about 2.5 mm long. Head ovoid, sor-
million color, capillitium elongating
after bursting of the peridium, tortuous
reticular, transversely ridged. Spores depressed
on one side, 2 div with No 10. Heads & spores
appear pale pinkish & red matter appears as a
separate diffused coloring in alcohol.

The same examined in water, the spores appeared colorless or with a faint pinkish hue, $2 \pm 2\frac{1}{2}$ div with No 10, spherical (The depression on one side appeared to be result of action of the alcohol) The threads of the capillitium were dark red - the color removed by alcohol.

Aethalium septentrionale. Partially attached to a tree stump, but for most part extended on some portion of some and on the petiole & leaves of a neighboring plant. Half oval 22 lines by 12 & about 5 lines thick. External dark orange and sulphur yellow. Internal sporular mass black. Spores pale violet brown about 3 div with No July 15th 1883.

Trichia turbinata. Closely crowded in a patch $1\frac{1}{2}$ inches long by 4 lines wide on rotten hemlock log. Peridium obvoid, sessile, about 1 m. capillitium of an interminable tortuous yellow thread with double spiral line & minutely echinulate. Spores large, yellow, slightly angled & minutely tuberculate. 4 div. No 10. Swarthmore Aug. 4, 1883.

Trichia pyriformis. Peridia oval, shining black, in groups, sessile; capillitium of long tortuous threads doubly spiral and distinctly echinulate; spores large (3 to 4 diam. $10\frac{1}{2}$) round or oval, with minutely granulate surface.

Thread & spores in mass burnt sienna color, under microscope orange sienna color, on decaying wood. Wallingford.

Other groups indurated red, & others blackish red, pyriform or turberculate, appear in blue sessile groups. Spores & threads as above. Integument of spores appears minutely granular. Presumably T. pyriformis. Aug. 8, 1883.

Spores mostly about 3 diam. a few even $4\frac{1}{2}$ diam. All with a clear nucleus.

Threads 2 diam. Spores globular, oval or ovoid.

Capillitium with spores in mass, in water, appear decidedly burnt sienna color to naked eye. Under microscope both appear orange sienna colored.

Arccyria ochroleuca? On decaying
chestnut log, Aug. 9. In groups, but
separated. Peridium cylindrical, round
at top, pale clay colored, stem shorter
also clay colored. Capillitium of retiform
threads transversely rugous, pale clay
blue, ~~2~~ about 1 div. thick. Spores
transparent, colorless from 2 to 2½ div
diam N^o 10. All overgrown with a
white mould.

Trichia pyriformis. in greatest abundance
in the crevices of the bark of a decaying
chestnut log. Aug. 9. Often with the
shining black pyriform heads in a circular
fascicle supported on a brown striate stem
2 m.m. long. Capillitium forms a red brown
ferruginous mass.

Trichia chrysosperma Crowded, sessile
oval or transversely oblong, bright ochraceous
yellow. Capillitium of finely ^{+ slightly} echinulate,
double spiral threads, with acute hook like
ends often ending in double hooks, bright
yellow. Spores 4 div. bright yellow
covered with reticular ridges. Threads 2 div.
N^o 10. On a chestnut log. Wallingford Aug. 7. 83

Trichia turbinata? Aug. 14, 83. Wallingford.

In close patches, crowded, sessile, topshaped,
OOO or thus longer than broad, slightly narrowed
below the middle, shining yellowish brown
to ochre colored. Capillitium bright ochre
yellow, mass of spines the same. Threads
tortuous, with double spiral lines, ends
hook like acute, bright yellow. Spores
large, double contoured, with reticular
ridges, bright yellow, round or oval,
.012 to .015 mm. Threads .006 mm, minutely
echinulate. On bark of a chestnut log.

Psocus

? Observed Aug. 1.

near base of trunk of Acer pseudo-platanus.

Four patches of which longest about 6 by 3 inches. Perfect insects and larvae. Abdomen brown with narrow rings of pale yellow; head & thorax pale brown; wing covers black with whitish veins. Three ocelli. Two joints to tarsi besides ungues; long black antennae.

Length of perfect insects including wings about 4 lines. Observed on Sugar Maple and on Linden Aug. 4 & 5th.

August 13, 1883 Wallingford N^o 4

Smallest Katydid. Male

Wing cover elliptical 37 mm long

11 mm in broad

hind limb 72 mm

Femur 33 mm. tibiae & ungues 5 mm

Antennae 40 mm. memb. wing 40 lines.

Lower Subcaudal process, hardly projecting beyond the lateral ones 3 mm long, notched at end; straight.

Length from head to end of subcaudal process 24 mm.

Second sized Katydid. Male. No 2

Wing cover rhombus - elliptic, 44 mm

long, 15 mm wide

Hind limb 50 mm

femur 22 tibia 25

tarsus 5 mm.

Antennae 47 mm. Memb. wings 50 mm. long

Abdomen ends as in former, Subcaudal

appendage straight, scarcely longer than the

lateral ones, forked⁺ or notched at end, 5 mm long

Philadelphia form. Possibly the same as
the one in No. 1. x forked straight

Smallest Katydid. Common form.

Male. Antennae 45 mm.

No 3

Hind limb 50 mm femur 26 tibia 28

Insect green except back of hind tibiae

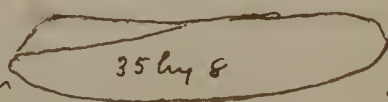
which is reddish brown. A subcaudal

recurved appendage, 7 mm in straight line,

forked⁺ at the end. A shorter dorso caudal

appendage.

shorter than



Elytron

ala.

Length from head to end of subcaudal process 27 mm

x forked as in No. 1

Drawn in No 1 brown with green mark

" No 2 + 3 green

" No 4 brown + green with green mark.

Experiments with Spores of various
Mycomycetes. Wallingford 1883.

Animalcula cage employed.
Introduced Spores of *Ethaliium septicum*
July 20th No perceptible change to
25th, when accidentally lost.

July 20 Introduced spores of *Stemonitis*
fusca. measure .009 mm.
23d no change 24th no change
except appearance of numerous
Bacterium termo, and many
globular Monads & a very few
vibratile *Anoebae*. 26th no change
28 no change except disappearance
of *Anoebae* and quiescence of
Monads. July 30th no change
Aug 1 no change 3, 5, 7, 9th do
when examination discontinued.

Aug 8th Spores of *Lichia pyriformis*.
" 9th 24 hrs after no change.
" 10th do do except
production of swarms of *B. termo*.

Aug. 11th no change Aug. 12th do.

Aug 13th do Introduced little

fragments of bast. Aug 14th no change
Aug. 15th no change " 16th do.

Threw away on 16th. and introduced
same sored on bast on the 14th. No
change on the 17th No change on Aug. 20th.

August 14th.







Introduced the large yellow areolated
spores of *Trichia turbinata*, .012
to .015 diameter. Aug 15. No change
many smaller colorless spores had
germinated in the usual tubular
manner. Aug. 16 no change; but
the mould - plants continue to
grow. Aug. 17 no change. Aug. 20 do.


Aug 21. No apparent change in spores. Noticed
for first time a multitude of minute scarcely
visible Anurochaete, about half the diameter
of the spores, of low current, but more rapid
change in form, mostly oval, elongated elliptical
clavate, angular, faintly granular, with a
contractile vesicle; but no visible nucleus.
measuring when circular about .006 mm or
elongated .012 long by .003 broad. Also as usual

multitudes of *Bacterium* forms present. See drawing for Anucleus.

Aug. 22 No evident change in Spores. The minute Anucleus newly all disappeared.

Aug. 24th no apparent change. There were present abundance of the following.

1. Numerous monads about .006 mm, round or oval or variable in form  move with a sudden jerk, or rapidly zigzag forward or in gyrations.
2. Fewer larger, mostly oval, with little change of form  .012 by .009, moved slowly & regularly forward.
3. A fewer than any other forms, were slow moving, gliding, changing shape in amoeboid manner, but never emitting pseudopods, about .015 mm when round or angular, thus  or .021 by .009 when thus  often seemed notched behind thus  occasionally apparently with a filamentous caudal appendage thus  Are they embryos of the spores? over

4. In addition minute Amoebas, about
.009 diam 

Aug. 25 No change in spores. Present great
swarms of the jerking monad No 1.

Aug. 30 No apparent change in Spores.
Amoeboids No 3 appear to have a posterior
appendage like the flagellum, but comparatively
inactive. After appears as a protrusion of the
sarcoderm which becomes a mere filament. After
used as point of attachment, & when stretched
& detached, becomes wrinkled.



(No 1/10 W. im. An apparent nucleus but no cont. vent.

Sep. 1 No observable change in spores.


Sep. 3 do. Same bright yellow with interior gran-
ular aspect with one or several clear nuclei -
Nos 1 & 2 monads still abundant - No 3 not
seen again for several days.

Sep. 7. Spores unchanged. Abundance of No 1 & 2
together with many minute very slow moving
Amoebae, and a ciliated infusorian here & there
generally quiet & then suddenly darting away.
8. Sep. Invaded by a Troncha.

Sep. 9 No apparent change in spores.

The smallest monad very numerous
apparently ovoid from above or below and
reniform laterally.

2 to 2½ long 1 to 1½ broad, flagellum about 1½
times length of body. Apparently a mouth, a
protein cont. ves. and globules & granules.

No 2 dis. app. + No 5 greatly increased - Sep. 10th See drawing of Sep. 10.
(No 5) A ciliate infusorian, ovoid
0.018 mm long by 0.012 broad, with a
short blunt beak , a nucleus
central, several globules and a C.V. behind
with long cilia, which I could barely
Permanently quiescent & cilia appear not
to move, then sudden bursts of
& a little & become again stationary.
This infusorian frequent.

Also many minute irregular Amoebas No 4

Another Amoeba observed 0.036 mm
by 0.009 mm four times length of breadth, slug-like
in form, moves slowly forward without change of
shape or position of pseudopods (moved its own
length in about 2 minutes) clear at ant.
obtusely rounded extremity with a nucleus; behind
this granular but no C.V. detected.

Sep. 10. night 9 p.m. No evident change in spores.
See over. Sep. 11th

20 *Arctia cinerea*? Swarthmore
Aug. 30, 1883. On decayed ash stump,
gregarious, 1 crowded, heads cylindrical,
rounded at top, whitish ash, or gray,
pedicle darker ash, shorter than the
head 4 mm long = heads 2.5 long
pedicle 1.5 long. Capillitium of
reticulated, tubous, transversely ridged
threads .0003 mm thick; spores, round
colorless .006 to .0075 diameter

Trichia ? on same stump
variety Samboze yellow, crowded in
groups, globular, oval, sometimes
in apparent pairs or three confluent,
sessile, shining, about $\frac{2}{3}$ mm in
diam. Spores large, finely granular
with 1 or 2 nuclei, smooth!, with
thin envelope, .0012 to .0015 mm in
diameter. Capillitium of darker
yellow, threads with double spiral
lines, with pointed ends, not
echinulate! var. cream white

var. cream white! same form, size
and structure as preceding. Shining
cream white, but on drying became
gamboge yellow nearly like former.

Spines and threads perfectly colorless,
transparent, and smooth. Finally became
translucent brown. Unlike of *P. turbinata*?

Boletus cyaneus? Swarthmore
Pileus convex, about 2 in. above
pale brownish, closely tomentose.

Stem solid. Tubes white

Flesh snow white; on breaking
rapidly & visibly assumed a
bright azure blue, then
prussian blue & finally ~~almost~~
an inkiness.

Aegoria incarnata. Heads opened
with capillitium & pedicle oval, 2 mm
bright indian red. Threads red,
spines paler, when isolated nearly
colorless. .0006 to .0075 mm diam.

On same wood as the *A. cinerea* &
Fischer above described. Swarthmore.

Aug. 30. 1883.

Stemonitis

? *Swarthmore*

Aug. 30, 83. on stump. Small 2 to 2.5 mm
Head cylindrical rounded at end, twice length
of stem, black 1.5 mm long 0.375 broad.
Stem black 0.75 long, extends about
three fourths way into head. Capillitium
black, or chocolate brown. Spores
round transparent chocolate brown,
0.006 mm diameter.



Sept. 11th & 12th Spores in the same condition
bright & yellow but no escape of embryos. On
the 8th was extensively invaded by growth
of a *Tronka*, but adding water & stirring up
the spores, broke up the growth of the latter
which is no longer perceived. The
ciliated infusorian active, but the
flagellate ones have disappeared, except
the smallest number. Sep 15 Spores unchanged.
Sep. 16 Spores unchanged, abundance of the
ciliated infusorian, but no anneloids!
Examined now over one month without
any obvious change observed. Sep. 18 Spores
unchanged. 19th 20th No Change Infusorium still
abundant. Same condition on Sep. 22. Finis.

Sept. 6th, the apparent decayed inner bark
of a White Oak, of yellowish white color and
pulverulent, on exam. by mic. proved to
be in large prismatic compound of
conspicuous crystals from $1/2000$ th
to $1/600$ th of an inch with very little
variety of shaped. Apparently Monoclinic.
Soluble in warm muriatic acid
without effervescence.

Measurements from 0.012 to 0.04 mm.
On examination of the decaying
liber of a Chestnut observed the
same crystals in great abundance.
Appear to occupy the liber cells
in single rows or columns, in which
about 60 crystals were counted in
the length of a millimetre. The cells
were about 0.024 broad. Crystals
supposed to be Calcium Sulphate?
See drawing of Sep. 8th. Gypsum?

Schacht, Dr. H. Anat. u. Phys. d. Gewächse.

Berlin 1856, I, 399 says "In der Regel erschei-
nen die Krystalle in bestimmten Zellreihen in
den Zellen, welche die Bastbündel in der
Rinde der Bäume umgeben."

Page 400" Die Bastzellen scheinen ausserdem
die unorganischen Salze, z. B. den
schwefelsauren Kalk u. s. w. von der
Knozel nach aufwärts zu führen und
auf diesem Wege an benachbarte
Parenchymzellen abzugeben, in
welchen diese Salze als Krystalle
abgeschieden werden. Für diese
Bemuthung spricht nur das reichliche,
niemals fehlende Vorkommen der
Krystalle in der Rinde unserer Bäume,
wo dieselben immer in der unmittelbaren
Nähe der Bastbündel auftreten,
als vorzügliche Beispiele: (*Quercus*,
Salix, *Populus*, *Larix*.

Sep. 10. Examined liber of White Oak, Black Oak
Chestnut. Crystals apparently in little
squarish cells from .012 to .024 mm,
arranged in longitudinal rows, longest at
middle and tapering at ends, occupying
crossing intervals among the lignous fibre
~~cells of the~~ cells, bast cells, of the liber; the
rows containing from 25 to 45 crystals.
Counted 45 crystals in a row in the Chestnut

Counted 25 in a row in white oak. In this
also counted 55 crystals in length of 1 mm.
Numbers generally from 11 to 14 in the
space of $\frac{1}{5}$ th mm.


Many of the crystals observed in a *Polydesmus*
granulatus, and also *Assulina*
seminulum. 6 specimens, largest
0.048 long 0.036 wide, smallest 0.04 long
0.032 wide. Also 4 globular *Diffugia*
① yellow, granular 0.04 high 0.056
broad, circular mouth 0.024.

Multitudes of crystals in larva of
a *Cumellicum*, taken from under
bark of a chestnut log. Sep. 12.
Probably larva of *Lucanus*?

Sep. 15. In white oak counted 32 and 35
crystals in single rows. Counted the
following numbers in 100 in mic No 7
= 0.4 mm : 21, 26, 28, 25, 22, 24. About

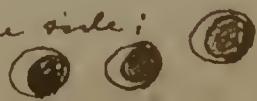
30 & 35 occupy the space of half a mm.
Counted the following numbers in rows: 32, 33, 34,
36, 27, 30.

Observed in liber of Chestnut. Crystals in rows
32 to 100 diam. mic. = 0.4 mm. Crystals &
arrangement exactly as in White Oak.

Crystals in liber of Butternut, Juglans
cinerea, in spherical aggregations 

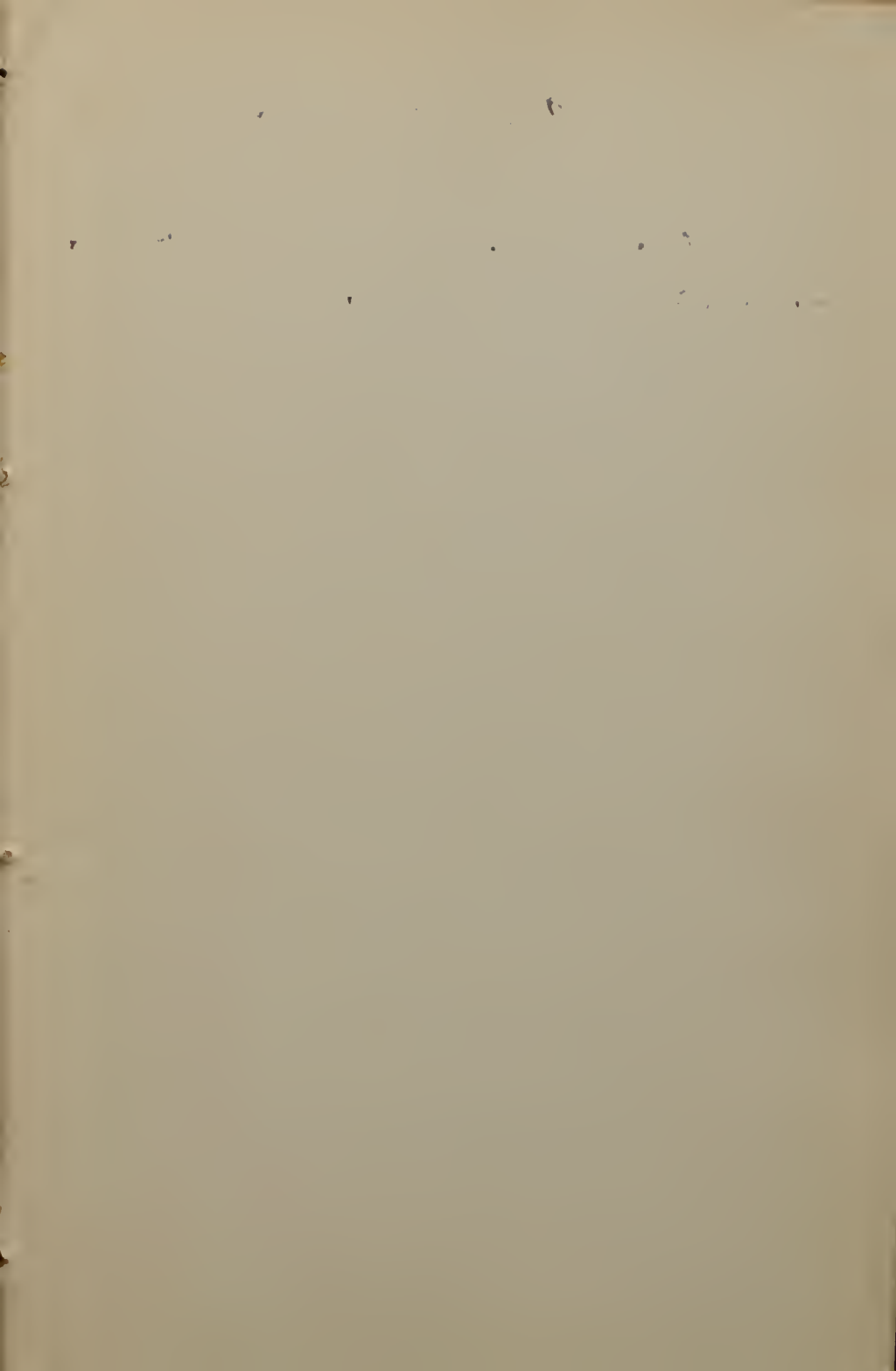
None seen in following: Pignut *Carya glabra*,
Dogwood *Cornus florida*, Wild Cherry, *Prunus*
cerifera, *Prunus serotina*,
Hornbeam *Carpinus*, Beech *Fagus sylvatica*.

Aethalium septicum. Sep. 14th
Collected a portion on a strawberry leaf
of the same observed Aug. 29 in the
meadow. The ground in the portion
at this time being black from the spores.
Sun. Sep. 16. Mixed a quantity of the
spicular mass with water, which then
diffused an odor resembling that of
opium. Portion placed in the cage
at 12 noon. Spores spherical, smooth,
chocolate brown, appear homogeneous
& defined by a single black ring,
uniform in size 0.009 mm diameter.
Granular matter mixed with the spores,
apparently of minute round spheres 0.0015 mm
when in mass appear yellow. Exhibit
lively molecular movement = range from
0.001 to 0.0015. Granules were all
dissolved, with production of bubbles of gas
by diluted osmotic acid. Portions of membrane
still remained of a yellow color. Under action
of the acid spores changed, the interior
matter contracted to a brown ball, with
a clear crescentic space to one side:



Sep. 17th, 18th, 19th No apparent change
in the spores. 20th no change. Sep. 21 ~~no~~
change Sep. 22 Head accidentally dried up.
Reinserted. No change on 23 + 24th.
Sep. 25. Again dried up.

Wallingford May 1884
Stemonitis May 24. Chocolate or
dark ferruginous brown, grow in a
clanly crowded group, on a willow stump
Same described after 4 leaves.



Lumbricus terreus, Say. A new species of
Lumbricus. By Thomas Say. Under head of
Article VI, Transylvania Journal of
Medicine, Vol. IV, 1832.

L. terreus, cylindrical, red; segments
unequal; sides & venter with 4 double longitudinal
series of short, small, curved bristles or hooks;
back unarmored; clitellus prominent & obvious;
posterior extremity not depressed, attenuated like
the anterior extremity. This is our common
earth worm, which has ^{been} hitherto considered as the
same with the terrestris L. of Europe, which
however has the posterior extremity depressed.
It differs from L. leptogonius, Waggenbach, of
Sweden, by having a clitellus. The L. (Hypogaeus)
hortensis, Savigny, of North America is described
to have a medio-dorsal series of hooks or
bristles. The species belongs to Savigny's genus
Entomon.

Manayunkia. From Edward Potts,
attached to pieces of pine bark, in
association with Alcyonella and
Fredericilla, from Egg Harbor, N.
J. Sept. 20, 83.

Tubes partly attached & in great part
free & directed downward as in the
Physa. Tubes brown, of indefinite
granular matter, somewhat annulate.

Specimen 1. Tube 7 mm long by $\frac{1}{3}$ mm wide

" 2. Tube 8 mm, — 0.375 wide

Tubes mostly straight or slightly curved,
attached at lower end, & free greater
part of length

Specimen of worm from tube 1. Body translucent

olive green, tentacles translucent olive brownish.

32 tentacles or 16 on each side, of which 1
larger than others, & containing a green vessel.

Epithelial cells of tentacles about 0.015 mm?

Cilia of same about twice the length 0.03 mm

Worm 3 to 4 mm long by $\frac{1}{4}$ mm thick.

Adult worm:— head with tentacles followed
by 11 setigerous segments. Anterior 8

segments on each side furnished with

long setae, usually 6 to 8 sometimes 10, arranged in two bundles, and one bundle longer than the other.
1st segment with 6 to 8 setae in two bundles & no podal hooks

Segments 2, 3, 4: with 8 to 10 setae in two bundles & fascicles of 4 to 5 podal hooks.

Segments 5, 6, 7, 8: 6 to 8 setae in two bundles & fascicles of 4 or 5 podal hooks.

Segment 9: 6 setae in two bundles & close row of comb hooks ~~about~~ 9 to 22. (4 to 6 setae.)

Segment 10: 4 setae do & 12 to 18 hooks. (3 to 4 setae)

In one specimen there was the following arrangement:

6th segment & others in advance 8 setae in two bundles and 4 hooks on each side

7th & 8th: 6 or 7 setae in two bundles, & another bundle of same number substituting the usual 4 hooks.

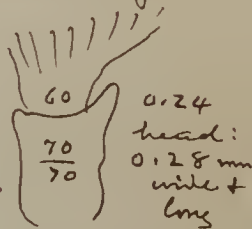
9th segment: 6 setae on each side; 20 hooks on one side & 9 on the other

10th segment 4 to 5 setae and 13 to 16 hooks

11 segment 3 to 4 setae and 12 hooks on each side.

A worm, with tentacles gathered in a cylinder.
 bunch measured 4 mm long. Body 0.375
 wide. Length of tentacles 0.75 Spread of
 tentacles. about 1.25 mm.

Bundles of setae 50 = 0.2 of which
 about half the length were projected.



At tail end

25 " 80

" 70

" 55

50

No 75H

Body 75 = 0.3 mm
 wide.

Brownish spots at base of tentacles along
 the lophophore.

In another specimen - 1st setiferous segment
 appeared to have no hooks + setae on each side
 The succeeding 7 segments with 3 hooks mostly
 + 6 to 10 setae on each side 9th segment with
 7 setae + 24 hooks 10th 3 setae + 18 hooks but
 on one side all the latter appeared imperfect, perhaps
 brownish 11th segt 2 setae + 14 hooks.

Of the posterior three series of comb hooks the
 1st row of 24 measured 0.08 mm wide; the second
 of 18 hooks 0.072 + the third of 14 hooks 0.06 mm
 height of the rows corresponding with length of
 the hooks 0.024 mm.

Setae 40 to 60 with No 7 = 0.16 to 0.24 mm.

Wallingford Sep. 25. Lumbricus common
under bark of damp decaying logs -
About 3 in. when quiet, ordinarily
elongating to four inches or more.
When irritated emits a yellowish
granular liquid with smell
of old tobacco pipe. Shore, the
rings distinctly marked with
dark reddish brown alternating
with light flesh color, which
is uniformly the color beneath.
About 95 annuli = 26 to free part of
body to girdle, which is slightly
prominent & comprises ^{5 or} 6 annulations
narrower & lighter than those in
advance or behind. Secretion
thrown out from between the annuli
especially at free and back extrem-
ities of body. Dark red bands
of back extend on sides and taper
& fade away beneath. Elongate
to 4 or 5 inches. Four rows of sigmoid
bristly spines, in pairs besides pairs of
partially developed ones. One 5 in by 2 lines.

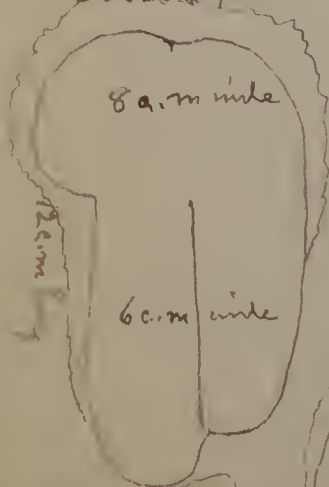
Wallingford 1884.

Observations on Myxomycetes.

June 8th. Observed on a prostrate
decaying chestnut log, lying in a
field. Ethalium septicum?

In three specimens, occupying a
space of about 10 inches long
by four inches wide, on the
outside of the bark and on upper
part of the log. In ripe state.
Looked like sections of light brownish
pink sponge applied to the bark.

Rounded or elliptical masses
convex above. These masses as follow:

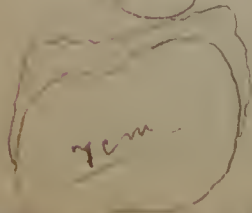
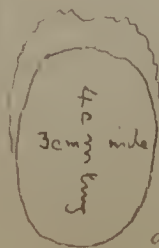


From one extremity or side
of each a spider-web-like
layer extended irregularly
from 1 to 2 c m in width.

The outer crust,
exceedingly friable
~~late~~ and spongy
reticular in appear-

ance was ~~about~~ ^{about} 3 ~~to~~ mm

thick, pale brownish pink
exteriorly, light yellow internally.



At the edges of the masses the color was more of a bright pale reddish brown, extending to the spider web like hythallus. The inner dense sporular mass was dark chocolate brown, or ~~leb~~ brownish black. Thickness of the masses about $\frac{1}{16}$ in.

The crust though generally from 2 to 4 mm thick in some position at base of the masses reached 9 mm. Beneath,

the sporular mass rested on a thin yellow layer next the bark.

Spores transparent, with brown tint, spherical smooth 0.009 mm diam. when large.

Crust of exceedingly ^{fine} spherical ^{yellow} molecules 0.0015 apparently imbedded in colorless cement or membrane.

More accurate measure-

ment of spores makes them about 0.0075,

that is two together usually were included in 5 div. of the mic. & a row of 4 in 10 div.

Content of spores obscurely granular & often with an indistinct appearance of nucleus.

These spores in line measure 8 div $\frac{80}{10}$
" " " 9 div.

usually isolated spores occupied 3 spaces of the micrometer
= 0.009 mm

May 24. On a white moldy surface in a bottle in
on wood side. Occupies out surface of trunk.

Stemonitis fusca?



Found a circular compact truncate
circular mass 1.5 cm in diameter and 8 mm high.

Rhizoids closely compacted, cylindrical, curved
obtusely rounded at the free end, tapering above.

Rhizoids 6 mm long, chocolate brown. Stems
shining black 1 mm long, capillitium brown.

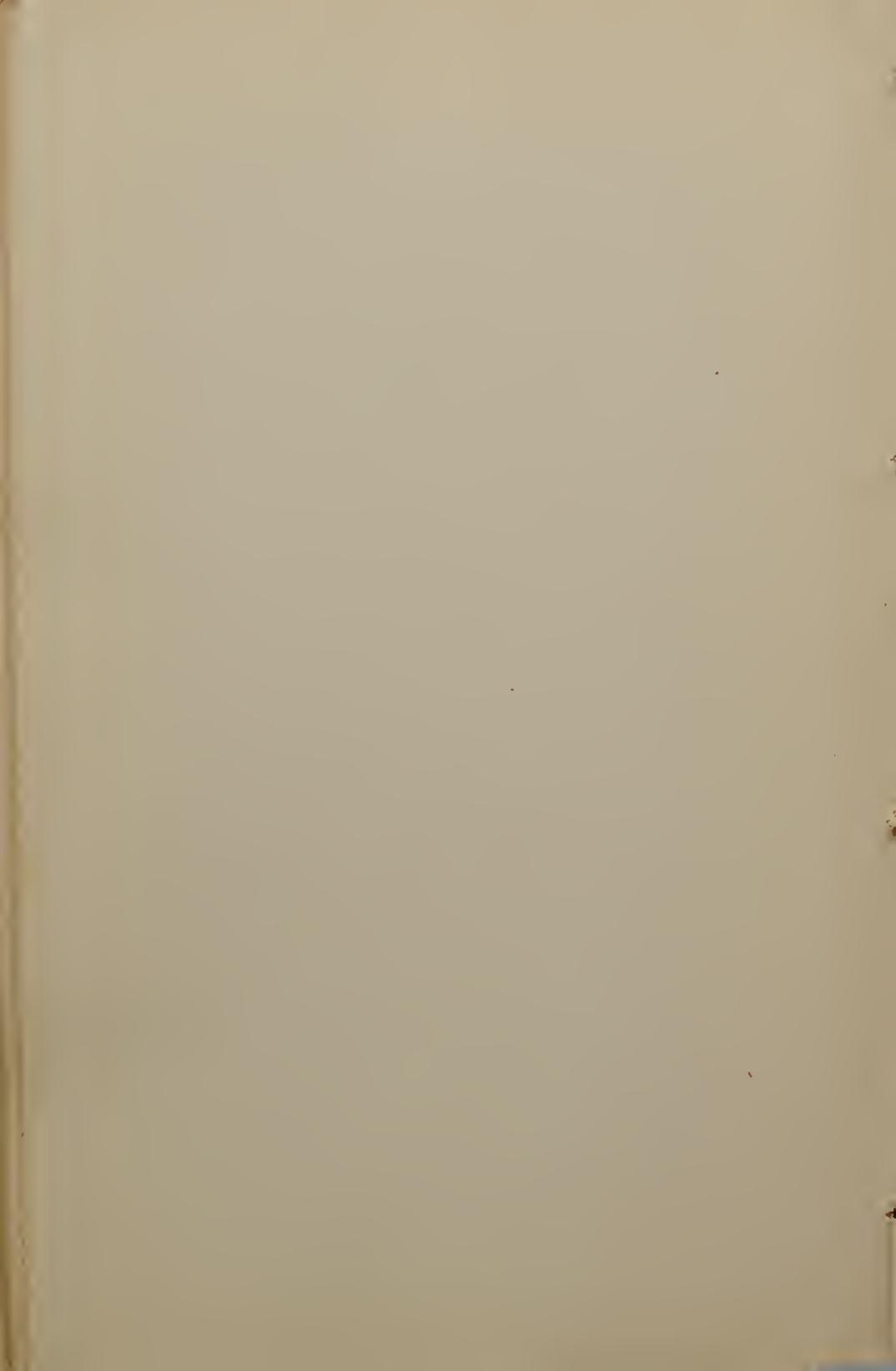
Spores spherical, translucent brown 0.0075 mm

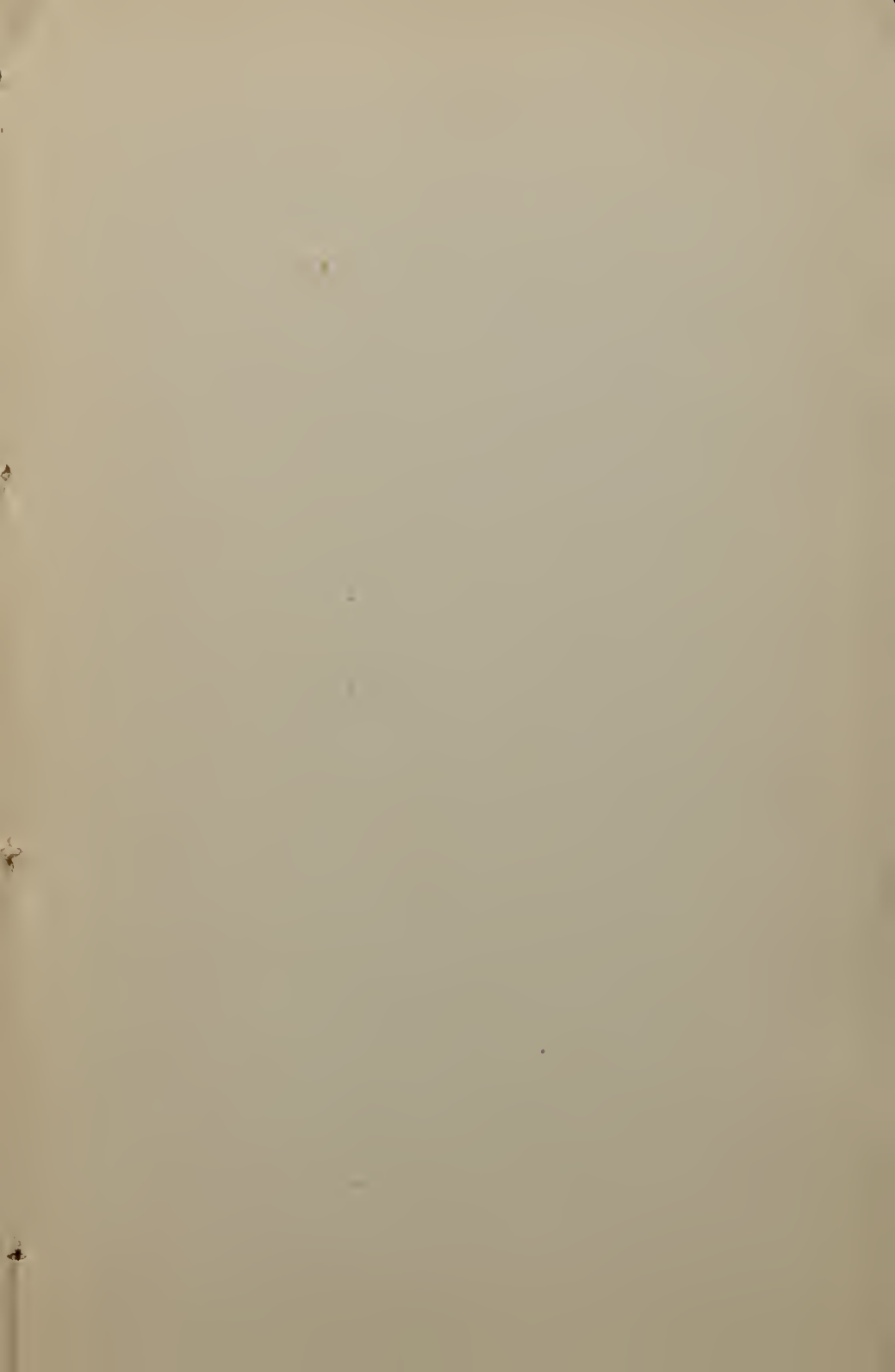
Isolated spores generally appear to be 0.009 mm.

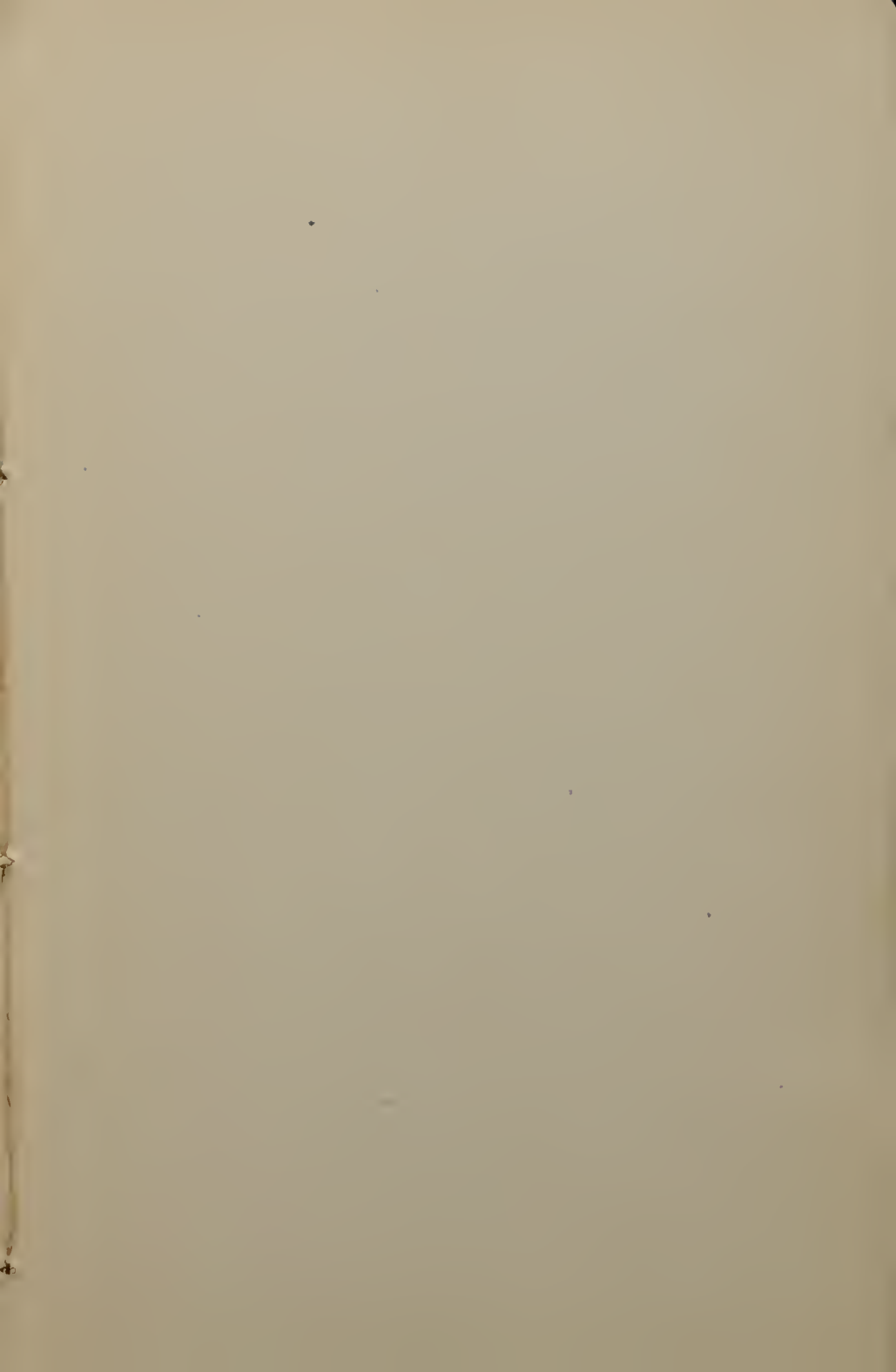
June 9. 84. Introduced a quantity of spores of
the Ethalium, collected the day previously, at 9.30
in cage with clear water & three minute fragments
of decaying chestnut heart. Water clear with no
bacteria & only a few molecules of the Ethalium
count. Spores,  spherical, translucent,
brown, pale granular with a few clearer
molecules, defined with a single black
circle, 0.009 diam. Evening no signs.
June 11, 7 a.m. no signs. A few  monads
present. Evening 5 p.m. no signs - but numerous
bacteria developed.

June 19, 84. Observed an Ethelium
septium. One mass about 2 in diam
circular, with grayish pulverulent
coat and interior black mass,
on top of a bare jumpy ridge of
earth in a freshly ploughed corn
patch. Wallingford.









Passalus cornutus. 2 Larvae
found in decayed log at Wal-
lingford Aug. 1883. A pupa
under bark of a decayed
white oak, in cocoon made
of debris of the decayed lichen
and wood, Kemic-oval in shape
scarcely 2 in by 1 inch, thick-
ness of wall about $\frac{1}{4}$ inch

Lamulicrus in decaying logs. June 9, 1884
Brown bands indist at ant. ext. - &
narrowing abruptly at the girdle; afterwards
uniform. Bands become conspicuous
under in elongation of the worm, espec-
ally the fore ~~part~~ ^{part} as fore part is
projected. Tapering in advance of
girdle & acute at head. More
gradually tapering behind & bluntly
rounded at tail end. First row
of spines included in brown bands,
which shortly after fade out beneath.
Girdle redder than elsewhere but dorsal bands
less distinctly marked in it.

Gregarina in *Phalangopsis*.

Swarthmore Aug. 30, 1883. In intestine
of a female, a large number perhaps
a hundred congregated in a mass
all in conjugation, the couples varying
from 0.18 to 0.3 mm long. In addition
there were two encysted 0.20 diameter.

Gregarines in larva of *Lucanus dama*?

Sep. 12, 83. Swarthmore. Body cylin-
drical rounded truncate behind. Three
small individuals and a pair in conjugation
also two encysted.

Podura. From under bark, Swarthmore Apr. 22, 85.

~~Podura~~ Scales largest 0.09 long 0.072 broad

Small one, 0.045 long 0.036 broad

" " 0.036 long 0.018 broad

Podura 3.5 mm long with a pair of spines
beneath. Body pale yellowish brown with
lead colored scales.



Aug. 30, 83. Swarthmore. Caterpillar on the
Hickory. Scarcely half an inch long; with
4 ~~four~~ rows of conical orange colored horns:
the shorter row lateral just above the
margin; the longer row divergent on
each side of the back. 10 to the lower
marginal row including one to head and
tail end, the first and third longest, the
others short & nearly uniform. 5 to the upper
row, excluding the one of head & tail
which are nearly in the same line &
included in the count of the former row.
The 3 intermediate horns longest & uniform
about $1\frac{1}{2}$ lines long. A dark purple
nearly black band along the back
and on each side, marked each by
three longitudinal lines of white. A similar
narrow band with one line of white
between the lower row of horns and the
inferior surface which is bordered with
orange. In the white line of the lower
dark band are the spiracles. Under
surface translucent brownish. Head
inconspicuous, concealed. Horns armed with
fine yellow stinging hairs?

Attacus Luna (Actias)

Luna Moth. Pale green with central eye-like spots to wings. Long appendages to hinder wings.

Caterpillar lives on Walnut & Hickory full grown in August. Pale bluish green with yellow stripe on each side & crossed with rings of same. Warts head colored tinged with red. Cocoon oval wrapped in leaves, which fall in autumn.

Polyphemus Moth.

Attacus Polyphemus (Telea).

Dull ochre yellow, with transparent eye-like spots to wings. In hindwings adjoining the eye-like spot a blue one shading into black. Expands 5 or 6 in.

Caterpillar. Feeds on Oaks, sometimes Elm & Pine trees.

In August & September. Pale green with prominently warts, tinted with orange or purple, an oblique white line at sides of rings; head & feet brown, tail bordered by a brown V-like line. Forms an oval cocoon covered with leaves, which fall off in the autumn.


Attacus Cecropia (Platysamia)

Cecropia Moth.

Larger than former. Color dusky brown with margins of wings clay color; near centre of each wing a reniform red spot with white centre & black edging. A ~~wavy~~ waving dull red band crossing wing. An eye-like spot near tip

of fore wing. Body & legs dull red with white bands.

Caterpillar on apple, cherry & plum & currant in July & August & September. Green, with coral red knots in front and yellow ones behind & light blue ones at sides all knotted with black points.

Forms large cocoon in September attached along a twig 

A. Prometheus (Callorania)

Prometheus Mth. Male deep smoky brown, Female light reddish brown.

Wings crossed by a wavy reddish line. An eye-like black spot bordered with bluish white crescent near tip of fore wings.

Caterpillars come to full size by Sept.

Pale bluish green; head, feet, & tail yellow.

Warts deep blue, except upper two on 2 & 3rd wings which are coral red. A yellow one on the 11th wing. Cocoon fastened to twig Harris says on Sarcoparus, wild cherry Azalea & Cephalanthus.

Hickory-horn-worm.

Regal walnut-moth.

Ceratomyxa regalis.

Caterpillar commonly noticed
feeding on the Walnut.

Adult green, about 4 in. long.

banded with pale blue, head & legs
orange; anterior larger horns orange,
the other black, all with minute
black spines.

Pupa formed under ground.

Imago appears in June.

Five wings live veined with red &
with yellow spots. Hindwings orange
with yellow patches. Body orange
except thorax which is yellow, hinds
red. Antennae feather like.
Also feeds on Hickory.

Dryocampa imperialis.

The Imperial moth. Wings yellow with dots & patches of purple brown, & crossed by band of same. Body yellow with purple brown. Appears in June. Lays eggs on Buttonwood.

Caterpillar in August & September 3 or 4 inches, green tinged with red, sometimes brown. Covered with scattered hairs. Head & legs orange. Noomy knuckles yellow covered with black prickles.

Chrysalis dark brown. Buried in ground.

Papilio Turnus.

Larva feeds on Apple + Wild Cherry.

Gotha Philodice

Yellow Butterfly of the roadsides &c.

Larva feeds on Clover &c.

Trombidium

From Fort Concho, Texas.

Body oblong; sides parallel, in front truncate, behind rounded. Velvety and haired, with white spots; these especially at the sides and behind underneath also at ~~ends~~ ^{joints} of joints of feet & beneath the joints. Length 4 lines. Smaller ones associated uniformly red; with body cordate in outline, wider in front, with more or less lateral constriction in interval of the two posterior pairs of limbs. A third variety nearly like the second, but less brilliant red & not contracted laterally.

Polydesmus virginicus.

Head black. Dorsal plates black merging behind into a narrow line of orange merging into a wider margin of yellow, and with the lateral tips orange. Ventral segments whitish margined behind laterally with orange. Legs yellow, Antennae pale with

$$\begin{array}{r} 025 \\ 25 \\ \hline 125 \\ 50 \\ \hline 625 \end{array}$$

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